EXHIBIT 1
DATE 2/17/09
HB 464

## Career Cluster: AGRICULTURE, FOOD AND NATURAL RESOURCES (AFNR)

### Career Pathway: Agribusiness Systems (ABS)

***Pathway Content Standard:*** The student will demonstrate competence in the application of principles and techniques for the development and management of agribusiness systems.

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **ABS.01. Performance Element: Utilize economic principles to establish and manage an AFNR enterprise.** | | | |
| **ABS.01.01. Performance Indicator:** Apply principles of capitalism in the business environment. | | | Social Studies: 7b and 7g |
| **ABS.01.01.01.a.** Recognize principles of capitalism as related to AFNR businesses. | **ABS.01.01.01.b.** Differentiate types of ownership and outline the structure of AFNR businesses in a capitalistic economic system. | **ABS.01.01.01.c.** Execute supply-and-demand principles in AFNR businesses. | |
| **ABS.01.02. Performance Indicator:** Apply principles of entrepreneurship in businesses. | | | Social Studies: 7d |
| **ABS.01.02.01.a.** Describe the meaning, importance and economic impact of entrepreneurship. | **ABS.01.02.01.b.** Classify the characteristics of successful entrepreneurs in AFNR businesses. | **ABS.01.02.01.c.** Demonstrate entrepreneurship, including idea generation, opportunity analysis and risk assessment. | |
| **ABS.02. Performance Element: Utilize appropriate management planning principles in AFNR business enterprises.** | | | |
| **ABS.02.01. Performance Indicator:** Compose and analyze a business plan for an enterprise. | | | Language Arts: 3, 4, 5, 7 and 8<br>Social Studies: 7h |
| **ABS.02.01.01.a.** Recognize quality AFNR business plan components that have been developed using the SMART (specific, measurable, attainable, realistic and timely) format. | **ABS.02.01.01.b.** Identify components of business plans and demonstrate how to write such components using the SMART format. | **ABS.02.01.01.c.** Prepare and critique AFNR business plans. | |
| **ABS.02.01.02.a.** Identify and observe ethical standards in planning and operating AFNR businesses. | **ABS.02.01.02.b.** Observe appropriate laws and regulations in planning and operating AFNR businesses. | **ABS.02.01.02.c.** Utilize methods of AFNR business enterprise analysis, such as SWOT (strengths, weaknesses, opportunities and threats). | |

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| **ABS.02.02. Performance Indicator:** Read, interpret, evaluate and write a mission statement to guide business goals, objectives and resource allocation. | | | Language Arts: 3, 4, 5 and 6 |
| **ABS.02.02.01.a.** Read and interpret mission statements. | **ABS.02.02.01.b.** Identify approaches in creating mission statements for AFNR businesses. | **ABS.02.02.01.c.** Create and disseminate a mission statement for business activities in AFNR. | |
| **ABS.02.02.02.a.** Identify the meaning and importance of goals and objectives in AFNR business enterprises. | **ABS.02.02.02.b.** Prepare short-term, intermediate and long-term goals and objectives that are consistent with the mission statement for an AFNR business. | **ABS.02.02.02.c.** Evaluate AFNR business goals and objectives and make revisions based on observations. | |
| **ABS.02.03. Performance Indicator:** Apply appropriate management skills to organize a business. | | | Language Arts: 12<br>Social Studies: 7f |
| **ABS.02.03.01.a.** Identify organizational structures and chains of command in AFNR businesses. | **ABS.02.03.01.b.** Identify management types in AFNR businesses. | **ABS.02.03.01.c.** Implement management approaches to assure efficiency and profitability. | |
| **ABS.02.03.02.a.** Identify appropriate local, state, federal, international and industry regulations for AFNR businesses. | **ABS.02.03.02.b.** Prepare and deliver AFNR business presentations that include customers served, sources of inputs and how a business produces goods and services. | **ABS.02.03.02.c.** Create an organizational chart for an AFNR business. | |
| **ABS.02.04. Performance Indicator:** Recruit, train and retain appropriate and productive human resources for businesses. | | | Language Arts: 4 and 9 |
| **ABS.02.04.01.a.** Identify the meaning and functions of human resources in AFNR businesses. | **ABS.02.04.01.b.** Determine appropriate human resources for AFNR businesses. | **ABS.02.04.01.c.** Write job descriptions for specific positions in an AFNR business. | |
| **ABS.02.04.02.a.** Identify usual employee benefits in AFNR businesses. | **ABS.02.04.02.b.** Design a career development and training plan for employees of an AFNR business. | **ABS.02.04.02.c.** Create a recruitment and evaluation program for employees in an AFNR business. | |
| **ABS.02.04.03.a.** Explain the meaning and importance of employee relations, including communication. | **ABS.02.04.03.b.** Establish and maintain appropriate records and reports on human resources. | **ABS.02.04.03.c.** Determine and follow appropriate regulations in recruiting, hiring and promoting personnel. | |

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| **ABS.02.04.04.a.** Identify the meaning and nature of employee compensation. | **ABS.02.04.04.b.** Design a legally compliant and competitive compensation plan for AFNR business employees. | **ABS.02.04.04.c.** Devise a compensation plan to equitably compensate, motivate and recognize productivity of human resources. | |
| **ABS.03. Performance Element: Utilize record keeping to accomplish AFNR business objectives while complying with laws and regulations.** | | | |
| **ABS.03.01. Performance Indicator:** Prepare and maintain all files needed to accomplish effective record keeping. | | | Math: 5A and 6B<br>Language Arts: 8 |
| **ABS.03.01.01.a.** Maintain production and agribusiness records. | **ABS.03.01.01.b.** Analyze records to improve efficiency and profitability of an AFNR business. | **ABS.03.01.01.c.** Apply management information systems in AFNR business financial analysis. | |
| **ABS.03.02. Performance Indicator:** Implement appropriate inventory management practices. | | | Language Arts: 8 |
| **ABS.03.02.01.a.** Monitor inventory to maintain optimal levels and calculate costs of carrying input and output inventory. | **ABS.03.02.01.b.** Use computer technology in inventory management and reporting, including spreadsheets, databases, word processing, networked systems and the Internet. | **ABS.03.02.01.c.** Apply logistics management strategies. | |
| **ABS.04. Performance Element: Apply generally accepted accounting principles and skills to manage cash budgets, credit budgets and credit for AFNR businesses.** | | | |
| **ABS.04.01. Performance Indicator:** Use accounting fundamentals to accomplish dependable bookkeeping and fiscal management. | | | Math: 1C, 5A and 5C<br>Social Studies: 7h |
| **ABS.04.01.01.a.** Budget resources, as applied to the AFNR business, including capital, human, financial and time. | **ABS.04.01.01.b.** Manage assets, including credit, for agribusiness goal achievement. | **ABS.04.01.01.c.** Manage resources to minimize liabilities and maximize profit. | |
| **ABS.04.01.02.a.** Identify financial concepts associated with production and profit. | **ABS.04.01.02.b.** Use accounting information to estimate the cost of goods sold and margins on the goods. | **ABS.04.01.02.c.** Evaluate characteristics of lines of credit, loan terms and alternatives in sources of capital. | |
| **ABS.04.01.03.a.** Explain the importance of return on investment for an agribusiness enterprise. | **ABS.04.01.03.b.** Analyze reporting requirements for income, property and employment taxes associated with small AFNR businesses. | **ABS.04.01.03.c.** Utilize accountants in AFNR business management. | |

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| **ABS.05. Performance Element: Assess accomplishment of goals and objectives by an AFNR business.** | | | |
| **ABS.05.01. Performance Indicator:** Maintain and interpret financial information (income statements, balance sheets, inventory, purchase orders, accounts receivable and cash-flow analyses) for businesses. | | | Math: 1C, 5A and 5C<br>Language Arts: 8 |
| **ABS.05.01.01.a.** Identify accounting information in AFNR business reporting and management. | **ABS.05.01.01.b.** Maintain accounting information needed to prepare an income statement, balance sheet and cash-flow analysis for an AFNR business. | **ABS.05.01.01.c.** Interpret financial information for an AFNR business to determine profitability, net worth position, financial ratios, performance measures and ability to meet cash-flow requirements. | |
| **ABS.05.01.02.a.** Name and explain the impact of external economic factors on an AFNR business. | **ABS.05.01.02.b.** Recognize how changes in prices of inputs and/or outputs influence the financial statements of an AFNR business. | **ABS.05.01.02.c.** Predict the consequences of delayed payment of expenses, prepayment of expenses and delayed receipts on a financial statement. | |
| **ABS.05.01.03.a.** Identify information needed for an AFNR business manager to monitor performance on a daily, weekly, monthly, quarterly and annual basis. | **ABS.05.01.03.b.** Interpret business performance data. | **ABS.05.01.03.c.** Conduct a breakeven analysis for an AFNR business. | |
| **ABS.05.01.04.a.** Calculate percentages, ratios and related business applications. | **ABS.05.01.04.b.** Summarize financial data for use in preparing various business financial statements. | **ABS.05.01.04.c.** Interpret and evaluate financial statements, including income statements, balance sheets and cash-flow analyses. | |
| **ABS.06. Performance Element: Use industry-accepted marketing principles to accomplish AFNR business objectives.** | | | |
| **ABS.06.01. Performance Indicator:** Conduct appropriate market and marketing research. | | | Social Studies: 7b and 7h |
| **ABS.06.01.01.a.** Investigate the meaning and methods of marketing in AFNR as related to agricultural commodities, products and services and to agricultural goods in domestic and international markets. | **ABS.06.01.01.b.** Apply benefit/cost analysis to marketing in AFNR businesses. | **ABS.06.01.01.c.** Implement and evaluate marketing strategies with agricultural commodities, products and services. | |

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| **ABS.06.01.02.a.** Describe functions in agricultural marketing. | **ABS.06.01.02.b.** Assess the presence of marketing infrastructure for agricultural commodities. | **ABS.06.01.02.c.** Evaluate alternative marketing strategies, such as value-adding, branding and niche marketing, and propose and implement appropriate modifications to achieve AFNR business goals. | |
| **ABS.06.02. Performance Indicator:** Develop a marketing plan. | | | Language Arts: 3, 5, 7 and 8<br>Social Studies: 7b and 7d |
| **ABS.06.02.01.a.** Identify the purpose, components and developmental processes of marketing plans. | **ABS.06.02.01.b.** Perform a marketing analysis, including evaluation of the competitors, customers, international and domestic policy environment, regulations and rules, standards and AFNR business resources. | **ABS.06.02.01.c.** Establish marketing plan goals/objectives, including monitoring, measuring and analyzing goal achievement. | |
| **ABS.06.03. Performance Indicator:** Develop strategies for marketing plan implementation. | | | Social Studies: 7b and 7h |
| **ABS.06.03.01.a.** Identify and use strategies frequently employed in marketing programs, including those used in niche markets. | **ABS.06.03.01.b.** Determine marketing strategies that are most likely to be effective in an AFNR business. | **ABS.06.03.01.c.** Revise marketing strategies based on monitoring and measurement information for target customer base. | |
| **ABS.06.04. Performance Indicator:** Develop specific tactics to market AFNR products and services. | | | Social Studies: 7b, 7g and 7h |
| **ABS.06.04.01.a.** Explain the meaning and use of the four Ps (product, place, price and promotion) in marketing. | **ABS.06.04.01.b.** Develop advertising campaigns that promote products and services. | **ABS.06.04.01.c.** Implement sales goals and incentive programs, and identify pricing strategies used by competitors. | |
| **ABS.06.05. Performance Indicator:** Merchandise products and services to achieve specific marketing goals. | | | Language Arts: 4<br>Social Studies: 7b and 7d |
| **ABS.06.05.01.a.** Identify, explain and organize components of the sales process. | **ABS.06.05.01.b.** Develop effective customer relationships using approaches that are consistent and comprehensive. | **ABS.06.05.01.c.** Monitor marketing approaches to determine effectiveness in goal achievement, and make needed changes in such approaches. | |

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| **ABS.06.05.02.a.** Develop strategies to gain new customers. | **ABS.06.05.02.b.** Devise sales practices to achieve goals effectively and efficiently. | **ABS.06.05.02.c.** Prepare and make sales presentations. | |
| **ABS.06.05.03.a.** Identify and maintain needed sales records. | **ABS.06.05.03.b.** Use strategies to follow up sales to provide post-sales service. | **ABS.06.05.03.c.** Intercept, interpret and process customer complaints, needs and problems with products and services. | |
| **ABS.07. Performance Element: Create a production system plan.** | | | |
| **ABS.07.01. Performance Indicator:** Prepare a step-by-step production plan that identifies needed resources. | | | Language Arts: 4, 5 and 8 |
| **ABS.07.01.01.a.** Prepare a flowchart that shows production processes, including the resources needed for each step. | **ABS.07.01.01.b.** Identify and assess alternative production systems and ways products can be produced. | **ABS.07.01.01.c.** Adapt production processes based on changing product characteristics. | |
| **ABS.07.02. Performance Indicator:** Develop a production and operational plan. | | | Language Arts: 4, 5, 6 and 12 |
| **ABS.07.02.01.a.** Identify the components of a production and operational plan. | **ABS.07.02.01.b.** Evaluate the components of a production and operational plan and then revise an existing plan. | **ABS.07.02.01.c.** Develop and implement a product supply and distribution plan that meets the goals and objectives of an AFNR business. | |
| **ABS.07.02.02.a.** Identify common resources needed to operate a production facility. | **ABS.07.02.02.b.** Examine legal and industry requirements for a production facility. | **ABS.07.02.02.c.** Develop a production facility plan that includes building, equipment, personnel, utilities and logistics components. | |
| **ABS.07.03. Performance Indicator:** Utilize appropriate techniques to determine the most likely strengths, weaknesses and inconsistencies in a business plan and relate these to risk management strategies. | | | Language Arts: 12 |
| **ABS.07.03.01.a.** Examine a business plan to identify inconsistencies and actions to correct inconsistencies. | **ABS.07.03.01.b.** Describe approaches to use in revising a business plan for improved consistency and realism. | **ABS.07.03.01.c.** Revise business plans as needed to assure internal consistency. | |

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| **ABS.07.04. Performance Indicator:** Manage risk and uncertainty. | | | Language Arts: 12 |
| **ABS.07.04.01.a.** Determine the meaning and importance of risk and uncertainty with AFNR enterprises. | **ABS.07.04.01.b.** Describe alternative approaches to reducing risk, including the use of insurance for product liability, property, production or income loss and for personnel life and health. | **ABS.07.04.01.c.** Prepare a comprehensive risk management and contingency plan for an AFNR business. | |

## Career Cluster: AGRICULTURE, FOOD AND NATURAL RESOURCES (AFNR)

### Career Pathway: Animal Systems (AS)

***Pathway Content Standard:*** The student will demonstrate competence in the application of scientific principles and practices to the production and management of animals.

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **AS.01. Performance Element: Examine the components, historical development, global implications and future trends of the animal systems industry.** | | | |
| **AS.01.01. Performance Indicator:** Evaluate the development and implications of animal origin, domestication and distribution. | | | Science: C3<br>Social Studies: 7h |
| **AS.01.01.01.a.** Identify the origin, significance, distribution and domestication of animal species. | **AS.01.01.01.b.** Evaluate and describe characteristics of animals that developed in response to the animals' environment and led to their domestication. | **AS.01.01.01.c.** Predict adaptations of animals to production practices and environments. | |
| **AS.01.01.02.a.** Define major components of the animal industry. | **AS.01.01.02.b.** Outline the development of the animal industry and the resulting products, services and careers. | **AS.01.01.02.c.** Predict trends and implications of future development of the animal systems industry. | |
| **AS.02. Performance Element: Classify, evaluate, select and manage animals based on anatomical and physiological characteristics.** | | | |
| **AS.02.01. Performance Indicator:** Classify animals according to hierarchical taxonomy and agricultural use. | | | Science: C3 |
| **AS.02.01.01.a.** Explain the importance of the binomial system of nomenclature. | **AS.02.01.01.b.** Explain how animals are classified using Linnaeus's taxonomical classification system. | **AS.02.01.01.c.** Classify animals according to the taxonomical classification system. | |
| **AS.02.01.02.a.** Identify major animal species by common and scientific names. | **AS.02.01.02.b.** Compare and contrast the hierarchical classification of the major agricultural animal species. | **AS.02.01.02.c.** Appraise and evaluate the economic value of animals for various applications in the agriculture industry. | |
| **AS.02.02. Performance Indicator:** Apply principles of comparative anatomy and physiology to uses within various animal systems. | | | Science: C1, C5 and F2 |
| **AS.02.02.01.a.** Identify basic characteristics of animal cells, tissues, organs and body systems. | **AS.02.02.01.b.** Compare and contrast animal cells, tissues, organs and body systems. | **AS.02.02.01.c.** Explain how the components and systems of animal anatomy and physiology relate to the production and use of animals. | |

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| **AS.02.02.02.a.** Diagram a typical animal cell and identify the organelles. | **AS.02.02.02.b.** Describe the functions of animal cell structures. | **AS.02.02.02.c.** Describe the molecular makeup of animal cells and its importance in animal production and management. | |
| **AS.02.02.03.a.** Describe the basic functions of animal cells in growth and reproduction. | **AS.02.02.03.b.** Detail the processes of meiosis and mitosis in animal growth, development, health and reproduction. | **AS.02.02.03.c.** Explain the application of the processes of meiosis and mitosis to animal growth, development, health and reproduction. | |
| **AS.02.02.04.a.** Describe the properties, locations, functions and types of animal tissues. | **AS.02.02.04.b.** Explain the relationship of animal tissues to growth, performance and health. | **AS.02.02.04.c.** Explain the importance and uses made of animal tissues in the agriculture industry. | |
| **AS.02.02.05.a.** Describe the properties, locations, functions and types of animal organs. | **AS.02.02.05.b.** Compare and contrast organ types and functions among animal species. | **AS.02.02.05.c.** Relate the importance of animal organs to the health, growth and reproduction of animals. | |
| **AS.02.02.06.a.** Describe the functions of the animal body systems and system components. | **AS.02.02.06.b.** Compare and contrast body systems and system adaptations between animal species. | **AS.02.02.06.c.** Explain the impact of animal body systems on performance, health, growth and reproduction. | |
| **AS.02.03. Performance Indicator:** Select animals for specific purposes and maximum performance based on anatomy and physiology. | | | Science: C5 |
| **AS.02.03.01.a.** Identify ways an animal's health can be affected by anatomical and physiological disorders. | **AS.02.03.01.b.** Compare and contrast desirable anatomical and physiological characteristics of animals within and between species. | **AS.02.03.01.c.** Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction. | |
| **AS.02.03.02.a.** Create a program to develop an animal to its highest potential performance. | **AS.02.03.02.b.** Assess an animal to determine if it has reached its optimal performance level based on anatomical and physiological characteristics. | **AS.02.03.02.c.** Develop efficient procedures to produce consistently high-quality animals, well suited for their intended purposes. | |
| **AS.03. Performance Element: Provide for the proper health care of animals.** | | | |
| **AS.03.01. Performance Indicator:** Prescribe and implement a prevention and treatment program for animal diseases, parasites and other disorders. | | | Science: C4, F1 and F5 |
| **AS.03.01.01.a.** Explain methods of determining animal health and disorders. | **AS.03.01.01.b.** Perform simple health-check evaluations on animals. | **AS.03.01.01.c.** Perform diagnostic tests to detect health problems in animals. | |

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| **AS.03.01.02.a.** Identify common diseases, parasites and physiological disorders that affect animals. | **AS.03.01.02.b.** Diagnose illnesses and disorders of animals based on symptoms and problems caused by diseases, parasites and physiological disorders. | **AS.03.01.02.c.** Treat common diseases, parasites and physiological disorders of animals. | |
| **AS.03.01.03.a.** Explain characteristics of causative agents and vectors of diseases and disorders in animals. | **AS.03.01.03.b.** Evaluate preventive measures for controlling and limiting the spread of diseases, parasites and disorders among animals. | **AS.03.01.03.c.** Design and implement a health maintenance and disease and disorder prevention plan for animals in their natural and/or confined environments. | |
| **AS.03.01.04.a.** Explain the clinical significance of common considerations in veterinary treatments, such as aseptic techniques. | **AS.03.01.04.b.** Prepare animals, facilities and equipment for surgical and nonsurgical veterinary treatments and procedures. | **AS.03.01.04.c.** Perform surgical and nonsurgical veterinary treatments and procedures in animal health care. | |
| **AS.03.01.05.a.** Identify and describe zoonotic diseases. | **AS.03.01.05.b.** Explain the health risk of zoonotic diseases to humans and their historical significance and future implications. | **AS.03.01.05.c.** Implement zoonotic disease prevention methods and procedures for the safe handling and treatment of animals. | |
| **AS.03.02. Performance Indicator:** Provide for the biosecurity of agricultural animals and production facilities. | | | Science: F5 and F6<br>Social Studies: 9d |
| **AS.03.02.01.a.** Explain the importance of biosecurity to the animal industry. | **AS.03.02.01.b.** Discuss procedures at the local, state and national levels to ensure biosecurity of the animal industry. | **AS.03.02.01.c.** Implement a biosecurity plan for an animal production operation. | |
| **AS.04. Performance Element: Apply principles of animal nutrition to ensure the proper growth, development, reproduction and economic production of animals.** | | | |
| **AS.04.01. Performance Indicator:** Formulate feed rations to provide for the nutritional needs of animals. | | | Math: 1C and 6B<br>Science: A4 and C5 |
| **AS.04.01.01.a.** Compare and contrast common types of feedstuffs and the roles they play in the diets of animals. | **AS.04.01.01.b.** Determine the relative nutritional value of feedstuffs by evaluating their general quality and condition. | **AS.04.01.01.c.** Select appropriate feedstuffs for animals based on factors such as economics, digestive system and nutritional needs. | |

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| **AS.04.01.02.a.** Explain the importance of a balanced ration for animals. | **AS.04.01.02.b.** Appraise the adequacy of feed rations using data from the analysis of feedstuffs, animal requirements and performance. | **AS.04.01.02.c.** Formulate animal feeds based on nutritional requirements, using feed ingredients for maximum nutrition and optimal economic production. | |
| **AS.04.02. Performance Indicator:** Prescribe and administer animal feed additives and growth promotants in animal production. | | | Science: C5 |
| **AS.04.02.01.a.** Explain the purpose and benefits of feed additives and growth promotants in animal production. | **AS.04.02.01.b.** Discuss how feed additives and growth promotants are administered and the precautions that should be taken. | **AS.04.02.01.c.** Prescribe and administer feed additives and growth promotants. | |
| **AS.05. Performance Element: Evaluate and select animals based on scientific principles of animal production.** | | | |
| **AS.05.01. Performance Indicator:** Evaluate the male and female reproductive systems in selecting animals. | | | Science: C1 and C3 |
| **AS.05.01.01.a.** Explain the male and female reproductive organs of the major animal species. | **AS.05.01.01.b.** Describe the functions of major organs in the male and female reproductive systems. | **AS.05.01.01.c.** Select breeding animals based on characteristics of the reproductive organs. | |
| **AS.05.02. Performance Indicator:** Evaluate animals for breeding readiness and soundness. | | | Science: C6 |
| **AS.05.02.01.a.** Explain how age, size, life cycle, maturity level and health status affect the reproductive efficiency of male and female animals. | **AS.05.02.01.b.** Summarize factors that lead to reproductive maturity. | **AS.05.02.01.c.** Evaluate and select animals for reproductive readiness. | |
| **AS.05.02.02.a.** Discuss the importance of efficient and economic reproduction in animals. | **AS.05.02.02.b.** Evaluate reproductive problems that occur in animals. | **AS.05.02.02.c.** Treat or cull animals with reproductive problems. | |
| **AS.05.03. Performance Indicator:** Apply scientific principles in the selection and breeding of animals. | | | Math: 6C<br>Science: A4, C2 and E2 |
| **AS.05.03.01.a.** Explain genetic inheritance in agricultural animals. | **AS.05.03.01.b.** Explain the advantages of using genetically superior animals in the production of animals and animal products. | **AS.05.03.01.c.** Select a breeding system based on the principles of genetics. | |
| **AS.05.03.02.a.** Define natural and artificial breeding methods. | **AS.05.03.02.b.** Explain the processes of natural and artificial breeding methods. | **AS.05.03.02.c.** Select animal breeding methods based on reproductive and economic efficiency. | |

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| **AS.05.03.03.a.** Explain the use of quantitative breeding values (e.g., EPDs) in the selection of genetically superior breeding stock. | **AS.05.03.03.b.** Compare and contrast quantitative breeding value differences between genetically superior animals and animals of average genetic value. | **AS.05.03.03.c.** Select animals based on quantitative breeding values for specific characteristics. | |
| **AS.05.03.04.a.** Explain the advantages of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer. | **AS.05.03.04.b.** Explain the processes of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer. | **AS.05.03.04.c.** Perform procedures for estrous synchronization, superovulation, flushing, embryo transfer and other reproductive management practices. | |
| **AS.05.03.05.a.** Discuss the uses and advantages and disadvantages of natural breeding and artificial insemination. | **AS.05.03.05.b.** Explain the materials, methods and processes of artificial insemination. | **AS.05.03.05.c.** Demonstrate artificial insemination techniques. | |
| **AS.06. Performance Element: Outline handling procedures for the safety of animals, producers and consumers of animal products.** | | | |
| **AS.06.01. Performance Indicator:** Demonstrate safe animal handling and management techniques. | | | Science: C6 |
| **AS.06.01.01.a.** Discuss the dangers involved in working with animals. | **AS.06.01.01.b.** Outline safety procedures for working with animals by species. | **AS.06.01.01.c.** Interpret animal behaviors and execute protocols for safe handling of animals. | |
| **AS.06.01.02.a.** Explain the implications of animal welfare and animal rights for animal agriculture. | **AS.06.01.02.b.** Design programs that assure the welfare of animals and prevent abuse or mistreatment. | **AS.06.01.02.c.** Implement quality-assurance programs and procedures for animal production. | |
| **AS.06.02. Performance Indicator:** Implement procedures to ensure that animal products are safe. | | | Science: F1 and F5 |
| **AS.06.02.01.a.** Identify animal production practices that could pose health risks or are considered to pose risks by some. | **AS.06.02.01.b.** Discuss consumer concerns with animal production practices relative to human health. | **AS.06.02.01.c.** Implement a program to assure the safety of animal products. | |
| **AS.06.02.02.a.** Describe how animal identification systems can track an animal's location, nutrition requirements, production progress and changes in health. | **AS.06.02.02.b.** Explain why animal trace-back capability, using individual animal and farm identification systems, is important to producers and consumers. | **AS.06.02.02.c.** Implement an animal and/or premises identification program. | |

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| **AS.07. Performance Element: Select animal facilities and equipment that provide for the safe and efficient production, housing and handling of animals.** | | | |
| **AS.07.01. Performance Indicator:** Design animal housing, equipment and handling facilities for the major systems of animal production. | | | Science: C6 and F6 |
| **AS.07.01.01.a.** Identify facilities needed to house and produce each animal species safely and efficiently. | **AS.07.01.01.b.** Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe and efficient use of the facility. | **AS.07.01.01.c.** Design an animal facility, focusing on animal requirements, efficiency, safety and ease of handling. | |
| **AS.07.01.02.a.** Identify equipment and handling facilities used in modern animal production. | **AS.07.01.02.b.** Explain how modern equipment and handling facilities enhance the safe and economic production of animals. | **AS.07.01.02.c.** Select equipment and implement animal handling procedures and improvements to enhance production efficiency. | |
| **AS.07.02. Performance Indicator:** Comply with government regulations and safety standards for facilities used in animal production. | | | Science: F5 |
| **AS.07.02.01.a.** List the general standards (e.g., environmental, zoning, construction) that must be met in facilities for animal production. | **AS.07.02.01.b.** Evaluate an animal facility to determine if standards have been met. | **AS.07.02.01.c.** Design a facility that meets standards for the legal, safe, ethical and efficient production of animals. | |
| **AS.08. Performance Element: Analyze environmental factors associated with animal production.** | | | |
| **AS.08.01. Performance Indicator:** Reduce the effects of animal production on the environment. | | | Science: C4 and F4 |
| **AS.08.01.01.a.** Evaluate the effects of animal agriculture on the environment. | **AS.08.01.01.b.** Outline methods of reducing the effects of animal agriculture on the environment. | **AS.08.01.01.c.** Implement measures to reduce the impact of animal agriculture on the environment. | |
| **AS.08.02. Performance Indicator:** Evaluate the effects of environmental conditions on animals. | | | Science: C6 and F4 |
| **AS.08.02.01.a.** Identify optimal environmental conditions for animals. | **AS.08.02.01.b.** Describe the effects of environmental conditions on animal populations and performance. | **AS.08.02.01.c.** Establish and maintain favorable environmental conditions for animal growth and performance. | |

## Career Cluster: AGRICULTURE, FOOD AND NATURAL RESOURCES (AFNR)

### Career Pathway: Environmental Service Systems (ESS)

***Pathway Content Standard:*** The student will demonstrate competence in the application of scientific principles and techniques to the management of environmental service systems.

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **ESS.01. Performance Element: Use analytical procedures to plan and evaluate environmental service systems.** | | | |
| **ESS.01.01. Performance Indicator:** Analyze and interpret samples. | | | Math: 1A, 1B, 4A and 5B<br>Science: A2 |
| **ESS.01.01.01.a.** Identify sample types and sampling techniques, explain the importance of unbiased sampling and collect samples. | **ESS.01.01.01.b.** Determine the appropriate sampling techniques needed to generate statistical analysis data, and prepare valid chemical laboratory samples according to instructions. | **ESS.01.01.01.c.** Analyze and interpret results of sample measurements. | |
| **ESS.01.01.02.a.** Identify basic laboratory equipment and environmental monitoring instruments and explain their uses. | **ESS.01.01.02.b.** Demonstrate the proper use and maintenance of basic laboratory equipment and environmental monitoring instruments. | **ESS.01.01.02.c.** Calibrate and use laboratory and field equipment and instruments according to standard operating procedures. | |
| **ESS.02. Performance Element: Assess the impact of policies and regulations on environmental service systems.** | | | |
| **ESS.02.01. Performance Indicator:** Interpret laws affecting environmental service systems. | | | Science: F4<br>Language Arts: 1 and 8<br>Social Studies: 10c |
| **ESS.02.01.01.a.** Identify laws associated with environmental service systems. | **ESS.02.01.01.b.** Identify the purposes of laws associated with environmental service systems. | **ESS.02.01.01.c.** Abide by the specific laws pertaining to environmental service systems. | |
| **ESS.03. Performance Element: Apply scientific principles to environmental service systems.** | | | |
| **ESS.03.01. Performance Indicator:** Apply meteorology principles to environmental service systems. | | | Science: D2 and F4<br>Language Arts: 8<br>Social Studies: 3c |
| **ESS.03.01.01.a.** Identify components and structural layers of the earth's atmosphere. | **ESS.03.01.01.b.** Differentiate the types of weather systems and weather patterns. | **ESS.03.01.01.c.** Monitor meteorological conditions and accurately record and document the data. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **ESS.03.01.02.a.** Explain how meteorological conditions influence air quality. | **ESS.03.01.02.b.** Illustrate the formation of acid precipitation and explain its impact on the environment. | **ESS.03.01.02.c.** Monitor air quality and accurately record and document the data. | |
| **ESS.03.01.03.a.** Explain climate change and recognize signs of climate change. | **ESS.03.01.03.b.** Prepare a report on the environmental consequences of climate change. | **ESS.03.01.03.c.** Evaluate the predicted impacts of global climate change on environmental service systems. | |
| **ESS.03.01.04.a.** Explain the earth's balance of energy. | **ESS.03.01.04.b.** Explain the basics of the greenhouse effect and describe how the greenhouse effect alters the earth's balance of energy. | **ESS.03.01.04.c.** Explain processes that contribute to the change in levels of greenhouse gases. | |
| **ESS.03.02. Performance Indicator:** Apply soil science principles to environmental service systems. | | | Science: B2 and D2<br>Social Studies: 3k |
| **ESS.03.02.01.a.** Explain the process of soil formation through weathering. | **ESS.03.02.01.b.** Differentiate rock types and relate the chemical composition of mineral matter in soils to the parent material. | **ESS.03.02.01.c.** Apply knowledge of soil orders to environmental service systems. | |
| **ESS.03.02.02.a.** Describe the biodiversity found in soil and the contribution of biodiversity to the physical and chemical characteristics of soil. | **ESS.03.02.02.b.** Relate the activities of microorganisms in soil to environmental service systems. | **ESS.03.02.02.c.** Evaluate the uses of soil microorganisms in environmental service systems. | |
| **ESS.03.02.03.a.** Explain how the physical qualities of the soil influence the infiltration and percolation of water. | **ESS.03.02.03.b.** Identify the physical qualities of the soil that determine its use for environmental service systems. | **ESS.03.02.03.c.** Conduct tests of soil to determine its use for environmental service systems. | |
| **ESS.03.02.04.a.** Identify land uses, capability factors and land capability classes. | **ESS.03.02.04.b.** Use a soil survey to determine the land capability classes for different parcels of land in an area. | **ESS.03.02.04.c.** Design a master land-use management plan for a given area. | |
| **ESS.03.03. Performance Indicator:** Apply hydrology principles to environmental service systems. | | | Science: D2 |
| **ESS.03.03.01.a.** Describe the world's water supplies and discuss the many uses of water. | **ESS.03.03.01.b.** Describe characteristics of water that influence the biosphere and sustain life. | **ESS.03.03.01.c.** Research and debate one or more current environmental issues associated with the supplies of groundwater and surface water. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **ESS.03.03.02.a.** Demonstrate knowledge of hydrogeology by differentiating between groundwater and surface water. | **ESS.03.03.02.b.** Describe interactions between groundwater and surface water. | **ESS.03.03.02.c.** Use groundwater-flow equations and Darcy's Law to explain how geology and meteorology affect groundwater and groundwater flow. | |
| **ESS.03.03.03.a.** Define groundwater potential. | **ESS.03.03.03.b.** Identify differences in groundwater potential. | **ESS.03.03.03.c.** Delineate groundwater potential zones. | |
| **ESS.03.03.04.a.** Identify environmental hazards associated with groundwater supplies. | **ESS.03.03.04.b.** Describe precautions taken to prevent/reduce contamination of groundwater supplies. | **ESS.03.03.04.c.** Test and document the quality of groundwater supplies. | |
| **ESS.03.03.05.a.** Discuss factors that influence the velocity of water through an open channel. | **ESS.03.03.05.b.** Explain how the velocity of water influences channel morphology and stream processes. | **ESS.03.03.05.c.** Measure and document water flow through an open channel and interpret channel-flow analysis. | |
| **ESS.03.03.06.a.** Identify the operational components of a pumping or fluid movement system. | **ESS.03.03.06.b.** Discuss design principles related to hydraulic systems and high-flow technologies related to fluid movement. | **ESS.03.03.06.c.** Install and maintain pumps and associated delivery systems. | |
| **ESS.03.04. Performance Indicator:** Apply best management techniques associated with the properties, classifications and functions of wetlands. | | | Science: C4 and F3<br>Social Studies: 3c |
| **ESS.03.04.01.a.** Describe the functions of wetlands and differentiate types of wetlands. | **ESS.03.04.01.b.** Explain the criteria for classifying wetlands. | **ESS.03.04.01.c.** Apply the Hydrogeomorphic (HGM) Approach and National Wetland Inventories (NWI) to determine the classifications for local wetlands. | |
| **ESS.03.04.02.a.** Identify the major types of living organisms that inhabit wetlands. | **ESS.03.04.02.b.** Identify the predominant species in a local wetland. | **ESS.03.04.02.c.** Conduct a survey of the predominant species in a local wetland. | |
| **ESS.03.04.03.a.** Explain the importance of wetland management, creation, enhancement and restoration programs. | **ESS.03.04.03.b.** Identify techniques used in wetland management, creation, enhancement and restoration programs. | **ESS.03.04.03.c.** Evaluate and document the condition of a local wetland and apply techniques to manage, create, enhance and/or restore local wetlands. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **ESS.03.05. Performance Indicator:** Apply chemistry principles to environmental service systems. | | | Science: B2, B3 and F4 |
| **ESS.03.05.01.a.** Explain basic chemistry principles. | **ESS.03.05.01.b.** Distinguish the characteristics of inorganic and organic compounds as they relate to environmental service systems. | **ESS.03.05.01.c.** Apply standard operating procedures for use of chemicals in environmental service systems. | |
| **ESS.03.06. Performance Indicator:** Apply microbiology principles to environmental service systems. | | | Science: A2, C1 and F1 |
| **ESS.03.06.01.a.** Identify the basic structures of microorganisms and the major groups of microorganisms. | **ESS.03.06.01.b.** Describe microbial growth in the environment and analyze the influence of environmental factors on microbial growth. | **ESS.03.06.01.c.** Collect, culture and examine microorganisms, following safety procedures. | |
| **ESS.03.06.02.a.** Define the purposes of bioassay tests. | **ESS.03.06.02.b.** Outline procedures for a bioassay test. | **ESS.03.06.02.c.** Conduct bioassay tests related to environmental service systems and interpret results. | |
| **ESS.04. Performance Element: Operate environmental service systems to manage a facility environment.** | | | |
| **ESS.04.01. Performance Indicator:** Use pollution control measures to maintain a safe facility environment. | | | Science: F4 and F5 |
| **ESS.04.01.01.a.** Identify types of pollution and distinguish between point source and nonpoint source pollution. | **ESS.04.01.01.b.** Give examples of how industrial and nonindustrial pollution has damaged the environment. | **ESS.04.01.01.c.** Survey the local area for evidence of industrial and nonindustrial pollution. | |
| **ESS.04.01.02.a.** Describe ways in which pollution can be managed and prevented. | **ESS.04.01.02.b.** Conduct tests to determine the presence and extent of pollution. | **ESS.04.01.02.c.** Plan and develop a pollution remediation, management or prevention program. | |
| **ESS.04.02. Performance Indicator:** Manage safe disposal of all categories of solid waste. | | | Science: F1, F4 and F5 |
| **ESS.04.02.01.a.** Describe different types of solid waste. | **ESS.04.02.01.b.** Evaluate environmental hazards created by different types of solid waste, solid waste accumulation and solid waste disposal. | **ESS.04.02.01.c.** Analyze environmental hazards associated with the identification and acceptance of solid waste disposal sites. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **ESS.04.02.02.a.** Discuss practical management options for treating solid waste. | **ESS.04.02.02.b.** Identify characteristics of solid waste treatment and recognize the byproducts of solid waste treatment. | **ESS.04.02.02.c.** Collect and treat solid waste materials. | |
| **ESS.04.02.03.a.** Define sanitary landfill. | **ESS.04.02.03.b.** Explain basic sanitary landfill operating procedures and design. | **ESS.04.02.03.c.** Evaluate sanitary landfill procedures. | |
| **ESS.04.02.04.a.** Define compost and composting. | **ESS.04.02.04.b.** Explain scientific principles related to composting. | **ESS.04.02.04.c.** Evaluate methods of operating a composting facility. | |
| **ESS.04.02.05.a.** Explain the basic concepts associated with solid waste incineration. | **ESS.04.02.05.b.** Describe the environmental impact of solid waste incineration. | **ESS.04.02.05.c.** Evaluate methods of incinerating solid waste, including those used in waste-to-energy plants. | |
| **ESS.04.02.06.a.** Explain the importance of recycling. | **ESS.04.02.06.b.** Describe recycling methods and identify materials that can be recycled. | **ESS.04.02.06.c.** Survey and evaluate local recycling programs and procedures. | |
| **ESS.04.03. Performance Indicator:** Apply the principles of public drinking water treatment operations to ensure safe water at a facility. | | | Science: F3 and F5 |
| **ESS.04.03.01.a.** Identify chemical and physical properties of drinking water. | **ESS.04.03.01.b.** Illustrate the steps in the public drinking water treatment process. | **ESS.04.03.01.c.** Demonstrate the use of water-testing instruments and water-treatment equipment for processing public drinking water. | |
| **ESS.04.03.02.a.** Define source water quality. | **ESS.04.03.02.b.** Define source water assessment steps. | **ESS.04.03.02.c.** Conduct and interpret source water assessments. | |
| **ESS.04.04. Performance Indicator:** Apply principles of wastewater treatment to manage wastewater disposal in keeping with rules and regulations. | | | Science: F4 and F5 |
| **ESS.04.04.01.a.** Define wastewater. | **ESS.04.04.01.b.** Diagram the steps in wastewater treatment. | **ESS.04.04.01.c.** Demonstrate the use of water-testing instruments and water-treatment equipment to treat wastewater. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **ESS.04.05. Performance Indicator:** Manage hazardous materials to assure a safe facility and to comply with applicable regulations. | | | Science: F4 and F5 |
| **ESS.04.05.01.a.** Identify types of hazardous materials. | **ESS.04.05.01.b.** Describe risks related to hazardous materials and describe health and safety practices to reduce risks from hazardous materials. | **ESS.04.05.01.c.** Describe the procedures for the treatment and disposal of hazardous materials and hazardous waste. | |
| **ESS.05. Performance Element: Examine the relationships between energy sources and environmental service systems.** | | | |
| **ESS.05.01. Performance Indicator:** Compare and contrast the impact of conventional and alternative energy sources on the environment. | | | Science: B6, D1 and F3 |
| **ESS.05.01.01.a.** Identify conventional energy sources and list conservation measures to reduce energy consumption. | **ESS.05.01.01.b.** Identify advantages and disadvantages to conventional energy sources. | **ESS.05.01.01.c.** Evaluate the impact the burning of fossil fuels has on the environment. | |
| **ESS.05.01.02.a.** Identify alternative energy sources. | **ESS.05.01.02.b.** Identify advantages and disadvantages to alternative energy sources. | **ESS.05.01.02.c.** Evaluate the impact of alternative energy sources on the environment. | |
| **ESS.06. Performance Element: Use tools, equipment, machinery and technology to accomplish tasks in environmental service systems.** | | | |
| **ESS.06.01. Performance Indicator:** Use technological and mathematical tools to map land, facilities and infrastructure. | | | Science: A3<br>Social Studies: 3c and 3e |
| **ESS.06.01.01.a.** Explain the importance of surveying and mapping for environmental service systems. | **ESS.06.01.01.b.** Explain surveying and mapping principles and identify and explain the use of equipment for surveying and mapping. | **ESS.06.01.01.c.** Demonstrate surveying and cartographic skills to make site measurements and map facility accesses and infrastructure. | |
| **ESS.06.02. Performance Indicator:** Maintain tools, equipment and machinery in safe working order for tasks in environmental service systems. | | | |
| **ESS.06.02.01.a.** Demonstrate proper use and maintenance of hand tools. | **ESS.06.02.01.b.** Operate equipment and machinery in accordance with manufacturers' instructions and OSHA standards, specifically addressing personal protective equipment and proper machine guarding. | **ESS.06.02.01.c.** Demonstrate proper preventive maintenance techniques and set up a mock preventive maintenance schedule. | |

## Career Cluster: AGRICULTURE, FOOD AND NATURAL RESOURCES (AFNR)

### Career Pathway: Food Products and Processing Systems (FPP)

***Pathway Content Standard:*** The student will demonstrate competence in the application of scientific principles, practices and techniques in the processing, storage and development of food products.

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **FPP.01. Performance Element: Examine components of the food industry and historical development of food products and processing.** | | | |
| **FPP.01.01. Performance Indicator:** Evaluate the significance and implications of changes and trends in the food products and processing industry. | | | Science: F1<br>Language Arts: 7 and 8<br>Social Studies: 1g and 8c |
| **FPP.01.01.01.a.** Discuss the history and describe and explain the components (e.g., processing, distribution, byproducts) of the food products and processing industry. | **FPP.01.01.01.b.** Evaluate changes and trends in the food products and processing industry. | **FPP.01.01.01.c.** Predict trends and implications in the food products and processing industry. | |
| **FPP.01.01.02.a.** Identify and explain environmental and safety concerns about the food supply. | **FPP.01.01.02.b.** Discuss the issues of safety and environmental concerns about foods and food processing (e.g., Genetically Modified Organisms, microorganisms, contamination, irradiation). | **FPP.01.01.02.c.** Determine appropriate industry response to consumer concerns to assure a safe and wholesome food supply. | |
| **FPP.01.02. Performance Indicator:** Work effectively with industry organizations, groups and regulatory agencies affecting the food products and processing industry. | | | Language Arts: 12<br>Social Studies: 6c and 8f |
| **FPP.01.02.01.a.** Explain the purposes of organizations that are part of or regulate the food products and processing industry. | **FPP.01.02.01.b.** Evaluate the changes in the food products and processing industry brought about by industry organizations or regulatory agencies. | **FPP.01.02.01.c.** Interact effectively with organizations, groups and regulatory agencies that affect the food products and processing industry. | |
| **FPP.01.02.02.a.** Explain the importance and usage of industry standards in food products and processing. | **FPP.01.02.02.b.** Discuss the application of industry standards in the food products and processing industry. | **FPP.01.02.02.c.** Prepare a plan for implementation of industry standards in food products and processing programs. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **FPP.02. Performance Element: Apply safety principles, recommended equipment and facility management techniques to the food products and processing industry.** | | | |
| **FPP.02.01. Performance Indicator:** Manage operational procedures and create equipment and facility maintenance plans. | | | Language Arts: 12 |
| **FPP.02.01.01.a.** Explain the importance of developing and maintaining Sanitation Standard Operating Procedures (SSOP). | **FPP.02.01.01.b.** Evaluate the SSOP of a food products and processing company. | **FPP.02.01.01.c.** Develop SSOP for a food products and processing company. | |
| **FPP.02.01.02.a.** Explain the purpose of Good Manufacturing Practices (GMP). | **FPP.02.01.02.b.** Evaluate the GMP of a food products and processing company. | **FPP.02.01.02.c.** Implement GMP for a food products and processing company. | |
| **FPP.02.01.03.a.** Identify reasons for using a planned maintenance program to maintain equipment and facilities. | **FPP.02.01.03.b.** Develop a basic equipment and facility maintenance program. | **FPP.02.01.03.c.** Perform basic equipment and facility maintenance in a food products and processing operation. | |
| **FPP.02.02. Performance Indicator:** Implement Hazard Analysis and Critical Control Point (HACCP) procedures to establish operating parameters. | | | Science: F5<br>Language Arts: 8 |
| **FPP.02.02.01.a.** Describe contamination hazards (physical, chemical and biological) associated with food products and processing. | **FPP.02.02.01.b.** Outline procedures to eliminate possible contamination hazards associated with food products and processing. | **FPP.02.02.01.c.** Analyze the effectiveness of a food products and processing company's Critical Control Point (CCP) procedures. | |
| **FPP.02.02.02.a.** Identify the seven principles of HACCP. | **FPP.02.02.02.b.** Explain the implementation of the seven principles of HACCP. | **FPP.02.02.02.c.** Implement an HACCP program for a food products and processing facility. | |
| **FPP.02.03. Performance Indicator:** Apply safety and sanitation procedures in the handling, processing and storing of food products. | | | Science: A2 and F5 |
| **FPP.02.03.01.a.** Explain techniques and procedures for the safe handling of food products. | **FPP.02.03.01.b.** Evaluate food product handling procedures. | **FPP.02.03.01.c.** Demonstrate approved food product handling techniques. | |
| **FPP.02.03.02.a.** Describe the importance of performing quality-assurance tests on food products. | **FPP.02.03.02.b.** Perform quality-assurance tests on food products. | **FPP.02.03.02.c.** Interpret quality-assurance test results and apply corrective procedures. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **FPP.02.03.03.a.** Describe the effects food-borne pathogens have on food products and humans. | **FPP.02.03.03.b.** Explain the importance of microbiological tests in food product preparation, listing common spoilage and pathogenic microorganisms. | **FPP.02.03.03.c.** Conduct and interpret microbiological tests for food-borne pathogens and implement corrective procedures. | |
| **FPP.02.03.04.a.** Explain the importance of record keeping in a food products and processing system. | **FPP.02.03.04.b.** Discuss documentation procedures in a food products and processing system. | **FPP.02.03.04.c.** Demonstrate proper record keeping in a food products and processing system. | |
| **FPP.02.04. Performance Indicator**: Demonstrate worker safety procedures with food product and processing equipment and facilities. | | | Science: F5<br>Language Arts: 8 |
| **FPP.02.04.01.a.** Explain safety standards that must be observed in facility design and equipment use. | **FPP.02.04.01.b.** Outline guidelines for personnel safety in the food products and processing industry. | **FPP.02.04.01.c.** Evaluate a facility to determine use of safety standards. | |
| **FPP.03. Performance Element: Apply principles of science to the food products and processing industry.** | | | |
| **FPP.03.01. Performance Indicator:** Apply principles of science to food processing to provide a safe, wholesome and nutritious food supply. | | | Science: A2, B3 and F1 |
| **FPP.03.01.01.a.** Discuss how research and industry developments lead to improvements in the food products and processing industry. | **FPP.03.01.01.b.** Design a research project in food science using the scientific method. | **FPP.03.01.01.c.** Conduct research in food science and interpret results to improve food products. | |
| **FPP.03.01.02.a.** Explain the application of chemistry and physics to food science. | **FPP.03.01.02.b.** Explain how the chemical and physical properties of foods influence nutritional value and eating quality. | **FPP.03.01.02.c.** Determine the chemical and physical properties of food products. | |
| **FPP.03.01.03.a.** Explain the Food Guide Pyramid in relation to essential nutrients for the human diet. | **FPP.03.01.03.b.** Compare and contrast the nutritive value of food and food groups. | **FPP.03.01.03.c.** Design a daily food guide for a healthful diet. | |
| **FPP.03.01.04.a.** Discuss common food constituents (e.g., proteins, carbohydrates, fats, vitamins, minerals, colors, flavors). | **FPP.03.01.04.b.** Compare and contrast food constituents and their relative value to product taste, appearance, etc. | **FPP.03.01.04.c.** Analyze food products to identify food constituents. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **FPP.03.01.05.a.** Identify common food additives (e.g., preservatives, antioxidants, buffers, stabilizers, colors, flavors). | **FPP.03.01.05.b.** Describe the purpose of common food additives. | **FPP.03.01.05.c.** Formulate and explain incorporation of additives into food products. | |
| **FPP.03.01.06.a.** Explain the importance of food labeling to the consumer. | **FPP.03.01.06.b.** Explain the required components of a food label. | **FPP.03.01.06.c.** Prepare and label foods according to the established standards of regulatory agencies. | |
| **FPP.03.01.07.a.** Describe factors in planning and developing a new food product (e.g., regulation, creativity, and economics). | **FPP.03.01.07.b.** Plan and create a new food product. | **FPP.03.01.07.c.** Perform sensory-testing and marketing functions to characterize and determine consumer preference and market potential. | |
| **FPP.04. Performance Element: Select and process food products for storage, distribution and consumption.** | | | |
| **FPP.04.01. Performance Indicator:** Utilize harvesting, selection and inspection techniques to obtain quality food products for processing. | | | Science: F1<br>Language Arts: 12 |
| **FPP.04.01.01.a.** Identify quality and yield grades of food products. | **FPP.04.01.01.b.** Discuss factors that affect quality and yield grades of food products. | **FPP.04.01.01.c.** Assign quality and yield grades to food products according to industry standards. | |
| **FPP.04.01.02.a.** Select raw food products based on yield grades, quality grades and related selection criteria. | **FPP.04.01.02.b.** Perform quality-control inspections of raw food products for processing. | **FPP.04.01.02.c.** Implement procedures to maintain original food quality and yield. | |
| **FPP.04.01.03.a.** Identify and describe accepted animal treatment and harvesting techniques. | **FPP.04.01.03.b.** Compare and contrast accepted animal treatment and harvesting techniques. | **FPP.04.01.03.c.** Harvest animals using regulatory-agency-approved or industry-approved techniques. | |
| **FPP.04.01.04.a.** Describe the importance of pre-mortem and post-mortem inspections of animals for harvest. | **FPP.04.01.04.b.** Explain desirable and undesirable characteristics of both pre-mortem and post-mortem animals in relation to the production of food products. | **FPP.04.01.04.c.** Conduct pre-mortem and post-mortem inspections of animals. | |
| **FPP.04.02. Performance Indicator:** Evaluate, grade and classify processed food products. | | | Science: F1<br>Language Arts: 8 |
| **FPP.04.02.01.a.** Identify and describe foods derived from meat, egg, poultry, fish and dairy products. | **FPP.04.02.01.b.** Discuss desirable qualities of processed meat, egg, poultry, fish and dairy products. | **FPP.04.02.01.c.** Evaluate, grade and classify processed meat, egg, poultry, fish and dairy products. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **FPP.04.02.02.a.** Identify and describe products derived from fruits and vegetables. | **FPP.04.02.02.b.** Discuss desirable qualities of fruit and vegetable products. | **FPP.04.02.02.c.** Evaluate, grade and classify processed products from fruits and vegetables. | |
| **FPP.04.02.03.a.** Identify and describe products derived from grains, legumes and oilseeds. | **FPP.04.02.03.b.** Discuss desirable qualities of grain, legume and oilseed products. | **FPP.04.02.03.c.** Evaluate, grade and classify finished products derived from grains, legumes and oilseeds. | |
| **FPP.04.03. Performance Indicator:** Process, preserve, package and present food and food products for sale and distribution. | | | Math: 1C, 4A and 4B<br>Science: F1 |
| **FPP.04.03.01.a.** Identify and explain common weights and measures used in the food products and processing industry. | **FPP.04.03.01.b.** Weigh and measure food products and perform conversions between units of measure. | **FPP.04.03.01.c.** Use weights and measures to formulate and package food products. | |
| **FPP.04.03.02.a.** Explain methods and materials for processing foods for sale as fresh-food products. | **FPP.04.03.02.b.** Prepare foods for sale and distribution as fresh-food products. | **FPP.04.03.02.c.** Evaluate foods prepared for the fresh-food market based on factors such as shelf life, shrinkage, appearance and weight. | |
| **FPP.04.03.03.a.** Identify methods of food preservation and give examples of foods preserved by each method. | **FPP.04.03.03.b.** Explain the processes of food preservation methods. | **FPP.04.03.03.c.** Preserve foods using various methods and techniques. | |
| **FPP.04.03.04.a.** Explain techniques for preparing ready-to-eat food products. | **FPP.04.03.04.b.** Demonstrate techniques of preparing ready-to-eat food products. | **FPP.04.03.04.c.** Evaluate ready-to-eat food products. | |
| **FPP.04.03.05.a.** Explain materials and methods of food packaging and presentation. | **FPP.04.03.05.b.** Select and utilize packaging materials in storing processed foods and raw food products. | **FPP.04.03.05.c.** Analyze the foods stored in various packaging materials to determine which materials retain desirable food qualities. | |
| **FPP.04.03.06.a.** Identify and explain storage conditions to preserve product quality. | **FPP.04.03.06.b.** Select methods and conditions for storing raw and processed food products. | **FPP.04.03.06.c.** Compare and contrast foods stored under varying conditions for quality, shelf life and intended use. | |

## Career Cluster: AGRICULTURE, FOOD AND NATURAL RESOURCES (AFNR)

### Career Pathway: Natural Resource Systems (NRS)

***Pathway Content Standard:*** The student will demonstrate competence in the application of scientific principles and techniques to the management of natural resources.

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **NRS.01. Performance Element: Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments.** | | | |
| **NRS.01.01. Performance Indicator:** Apply knowledge of natural resource components to the management of natural resource systems. | | | Math: 5a<br>Science: C4 and F3<br>Social Studies: 3h and 3k |
| **NRS.01.01.01.a.** Identify natural resources. | **NRS.01.01.01.b.** Differentiate between renewable and nonrenewable natural resources. | **NRS.01.01.01.c.** Research and debate one or more current issues related to the conservation or preservation of natural resources. | |
| **NRS.01.01.02.a.** Define ecosystem and related terms. | **NRS.01.01.02.b.** Describe the interdependence of organisms within an ecosystem. | **NRS.01.01.02.c.** Conduct a field study of an ecosystem, and record and document observations of species interactions. | |
| **NRS.01.02. Performance Indicator:** Classify natural resources. | | | Science: F3 |
| **NRS.01.02.01.a.** Describe morphological characteristics used to identify trees and other woody plants. | **NRS.01.02.01.b.** Identify trees and other woody plants. | **NRS.01.02.01.c.** Conduct a field inventory of trees and other woody plants, and record and document findings. | |
| **NRS.01.02.02.a.** Describe morphological characteristics used to identify herbaceous plants. | **NRS.01.02.02.b.** Identify herbaceous plants. | **NRS.01.02.02.c.** Conduct a field inventory of herbaceous plants, and record and document findings. | |
| **NRS.01.02.03.a.** Describe morphological characteristics used to identify wildlife species. | **NRS.01.02.03.b.** Identify wildlife species. | **NRS.01.02.03.c.** Conduct a field inventory of wildlife species, and record and document findings. | |
| **NRS.01.02.04.a.** Describe morphological characteristics used to identify aquatic species. | **NRS.01.02.04.b.** Identify aquatic species. | **NRS.01.02.04.c.** Conduct a field inventory of aquatic species, and record and document findings. | |
| **NRS.01.02.05.a.** Demonstrate techniques used to identify rock, mineral and soil types. | **NRS.01.02.05.b.** Identify rock, mineral and soil types. | **NRS.01.02.05.c.** Conduct a field inventory of rock, mineral and soil types, and record and document findings. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **NRS.02. Performance Element: Apply scientific principles to natural resource management activities.** | | | |
| **NRS.02.01. Performance Indicator:** Develop a safety plan for work with natural resources. | | | Science: F3 and F5<br>Language Arts: 8 |
| **NRS.02.01.01.a.** Identify hazards associated with the outdoor environment. | **NRS.02.01.01.b.** Demonstrate safety practices when working in an outdoor environment. | **NRS.02.01.01.c.** Demonstrate appropriate responses to accidents and injuries that occur in an outdoor environment. | |
| **NRS.02.01.02.a.** Recognize biohazards associated with natural resources. | **NRS.02.01.02.b.** Use appropriate techniques and equipment when working with biohazards. | **NRS.02.01.02.c.** Demonstrate appropriate responses for disasters involving biohazardous materials. | |
| **NRS.02.02. Performance Indicator:** Demonstrate cartographic skills to aid in developing, implementing and evaluating natural resource management plans. | | | Math: 4B<br>Science: A3 and F2<br>Social Studies: 3b and 3c |
| **NRS.02.02.01.a.** Demonstrate how to use maps to identify directions and features, calculate actual distance and determine the elevations of points. | **NRS.02.02.01.b.** Locate natural resources using a land survey and geographic coordinate system. | **NRS.02.02.01.c.** Employ Global Positioning System and Geographic Information Systems technologies to inventory features in natural resource management. | |
| **NRS.02.03. Performance Indicator:** Measure and survey natural resource status to obtain planning data. | | | Math: 5C<br>Science: A3 and F2<br>Social Studies: 3h |
| **NRS.02.03.01.a.** Describe the value of resource inventories and population studies. | **NRS.02.03.01.b.** Discuss the procedures for conducting resource inventories and population studies. | **NRS.02.03.01.c.** Conduct resource inventories and population studies to assess resource status. | |
| **NRS.02.04. Performance Indicator:** Demonstrate natural resource enhancement techniques. | | | Science: F3<br>Social Studies: 3g and 3k |
| **NRS.02.04.01.a.** Identify the different kinds of streams. | **NRS.02.04.01.b.** Identify indicators of the biological health of a stream. | **NRS.02.04.01.c.** Create and implement a stream enhancement plan. | |
| **NRS.02.04.02.a.** Identify characteristics of a healthy forest. | **NRS.02.04.02.b.** Identify ways in which forest stands may be improved. | **NRS.02.04.02.c.** Formulate a timber stand improvement plan for a forest. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **NRS.02.04.03.a.** Identify characteristics of a healthy wildlife habitat. | **NRS.02.04.03.b.** Identify methods of wildlife habitat improvement. | **NRS.02.04.03.c.** Conduct a survey of a habitat and devise a comprehensive improvement plan. | |
| **NRS.02.04.04.a.** Identify characteristics of healthy rangeland. | **NRS.02.04.04.b.** Identify methods of rangeland improvement. | **NRS.02.04.04.c.** Evaluate a rangeland and develop a management plan for improvement. | |
| **NRS.02.04.05.a.** Identify natural resource characteristics desirable for recreational purposes. | **NRS.02.04.05.b.** Identify natural resource management techniques for improving recreation opportunities. | **NRS.02.04.05.c.** Evaluate the impact of recreational activities on natural resources and create an improvement plan. | |
| **NRS.02.04.06.a.** Identify characteristics of healthy marine and coastal natural resources. | **NRS.02.04.06.b.** Identify methods to improve marine and coastal natural resources. | **NRS.02.04.06.c.** Assess marine and coastal natural resources and prepare an improvement plan. | |
| **NRS.02.05. Performance Indicator:** Interpret laws related to natural resource management and protection. | | | Science: F3<br>Language Arts: 7<br>Social Studies: 6c |
| **NRS.02.05.01.a.** Identify laws associated with natural resource systems. | **NRS.02.05.01.b.** Identify the purposes of laws associated with natural resource systems. | **NRS.02.05.01.c.** Abide by specific laws pertaining to natural resource systems. | |
| **NRS.02.05.02.a.** Define mitigation. | **NRS.02.05.02.b.** Identify issues involving mitigation of natural resources. | **NRS.02.05.02.c.** Demonstrate mitigation techniques for natural resources. | |
| **NRS.02.06. Performance Indicator:** Apply ecological concepts and principles to natural resource systems. | | | Science: D2 and F3<br>Social Studies: 3b, 3f and 3h |
| **NRS.02.06.01.a.** Identify biogeochemical cycles. | **NRS.02.06.01.b.** Diagram biogeochemical cycles and explain the processes. | **NRS.02.06.01.c.** Determine the human influence on biogeochemical cycles. | |
| **NRS.02.06.02.a.** Describe properties of watersheds and identify the boundaries of local watersheds. | **NRS.02.06.02.b.** Relate the function of watersheds to natural resources. | **NRS.02.06.02.c.** Analyze ecosystem functions of a watershed. | |
| **NRS.02.06.03.a.** Compare and contrast groundwater and surface-water flow. | **NRS.02.06.03.b.** Explain stream hydrology and structure, and determine the different classes of streams. | **NRS.02.06.03.c.** Classify and predict the behavior of local streams. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **NRS.02.06.04.a.** Define riparian zones and riparian buffers, and explain their functions. | **NRS.02.06.04.b.** Identify techniques used in the creation, enhancement and management of riparian zones and riparian buffers. | **NRS.02.06.04.c.** Create, enhance and manage riparian zones and riparian buffers. | |
| **NRS.02.06.05.a.** Describe the processes associated with ecological succession. | **NRS.02.06.05.b.** Give examples of primary-succession and secondary-succession species in a community of organisms. | **NRS.02.06.05.c.** Conduct a field study to determine the stages of ecological succession in a community of organisms. | |
| **NRS.02.06.06.a.** Explain population ecology, population density and population dispersion. | **NRS.02.06.06.b.** Discuss factors that influence population density and population dispersion. | **NRS.02.06.06.c.** Create and implement a management plan based on a population study for a community of organisms. | |
| **NRS.02.06.07.a.** Define invasive species. | **NRS.02.06.07.b.** Discuss factors that influence the establishment and spread of invasive species. | **NRS.02.06.07.c.** Develop and implement a plan to reduce the impact of invasive species on natural resources. | |
| **NRS.02.06.08.a.** Describe sources of pollution and delineate between point and nonpoint source pollution. | **NRS.02.06.08.b.** Describe the impact of pollution on natural resources. | **NRS.02.06.08.c.** Create and implement a plan to prevent or limit the effects of pollution on natural resources. | |
| **NRS.02.06.09.a.** Describe climatic factors that influence natural resources. | **NRS.02.06.09.b.** Describe the impact climate has on natural resources. | **NRS.02.06.09.c.** Monitor the effects of climate on plants and wildlife. | |
| **NRS.03. Performance Element: Apply knowledge of natural resources to production and processing industries.** | | | |
| **NRS.03.01. Performance Indicator:** Produce, harvest, process and use natural resource products. | | | Science: F3 |
| **NRS.03.01.01.a.** Describe forest harvesting methods. | **NRS.03.01.01.b.** Determine when to harvest forest products. | **NRS.03.01.01.c.** Harvest forest products according to principles of sustainable forest management. | |
| **NRS.03.01.02.a.** Describe uses of tree species. | **NRS.03.01.02.b.** Describe processing of forest products. | **NRS.03.01.02.c.** Process forest products. | |
| **NRS.03.01.03.a.** Identify wildlife species that can be sustainably harvested. | **NRS.03.01.03.b.** Describe techniques used in the harvesting of wildlife. | **NRS.03.01.03.c.** Formulate a management plan for protecting wildlife from overexploitation. | |
| **NRS.03.01.04.a.** Identify products obtained from wildlife species. | **NRS.03.01.04.b.** Describe techniques used in the processing of wildlife. | **NRS.03.01.04.c.** Process harvested wildlife. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **NRS.03.01.05.a.** Describe the value of minerals and ores to the economy. | **NRS.03.01.05.b.** Describe economically important minerals and ores that are extracted and processed. | **NRS.03.01.05.c.** Give examples of methods used to extract and process minerals and ores. | |
| **NRS.03.01.06.a.** Describe the value of fossil fuels to the economy. | **NRS.03.01.06.b.** Describe sources of fossil fuels and products made from fossil fuels. | **NRS.03.01.06.c.** Give examples of methods used to extract and process fossil fuels. | |
| **NRS.03.01.07.a.** Describe the benefits of hydroelectric generation. | **NRS.03.01.07.b.** Describe characteristics of sites that lend themselves to hydroelectric generation. | **NRS.03.01.07.c.** Describe hydroelectric generation techniques and procedures, and prepare a report on the impacts of hydroelectric dams on aquatic systems. | |
| **NRS.03.01.08.a.** Identify recreational uses of natural resources. | **NRS.03.01.08.b.** Debate an issue related to the recreational use of natural resources. | **NRS.03.01.08.c.** Evaluate a natural resource site and recommend opportunities for recreational activities. | |
| **NRS.03.01.09.a.** Identify aquatic species harvested for commercial and recreational purposes. | **NRS.03.01.09.b.** Describe techniques used to harvest aquatic species. | **NRS.03.01.09.c.** Harvest aquatic species according to sustainable management principles. | |
| **NRS.03.01.10.a.** Identify uses of aquatic species. | **NRS.03.01.10.b.** Explain techniques used to process aquatic species. | **NRS.03.01.10.c.** Process harvested aquatic species. | |
| **NRS.04. Performance Element: Demonstrate techniques used to protect natural resources.** | | | |
| **NRS.04.01. Performance Indicator:** Manage fires in natural resource systems. | | | Science: F5 |
| **NRS.04.01.01.a.** Differentiate between desirable and undesirable fires and prepare a report on the role fire plays in a healthy ecosystem. | **NRS.04.01.01.b.** Describe techniques used to suppress wildfires and manage prescribed fires. | **NRS.04.01.01.c.** Demonstrate the application of fire suppression and fire safety techniques. | |
| **NRS.04.02. Performance Indicator:** Diagnose plant and wildlife diseases and follow protocol to prevent their spread. | | | Science: F1 and F3<br>Social Studies: 9d |
| **NRS.04.02.01.a.** Identify causes of diseases in plants. | **NRS.04.02.01.b.** Report the observance of diseases affecting plants to the appropriate authorities. | **NRS.04.02.01.c.** Explain management techniques used to reduce infection and spread of plant diseases in natural resources. | |
| **NRS.04.02.02.a.** Identify causes of diseases in wildlife. | **NRS.04.02.02.b.** Report the observance of diseases affecting wildlife to the appropriate authorities. | **NRS.04.02.02.c.** Explain wildlife disease management techniques. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **NRS.04.03. Performance Indicator:** Manage insect infestations of natural resources. | | | Science: C4 and F3 |
| **NRS.04.03.01.a.** Identify harmful and beneficial insects and signs of insect damage to natural resources. | **NRS.04.03.01.b.** Report observance of insect pests to the appropriate authorities. | **NRS.04.03.01.c.** Describe techniques used to manage pests of natural resources. | |
| **NRS.05. Performance Element: Use effective methods and venues to communicate natural resource processes to the public.** | | | |
| **NRS.05.01. Performance Indicator:** Communicate natural resource information to the public. | | | Science: F3 and F6<br>Language Arts: 5 and 6 |
| **NRS.05.01.01.a.** Identify ways in which a message regarding natural resources may be communicated to the public. | **NRS.05.01.01.b.** Design and construct a display that communicates a natural resource topic and discuss the topic in a public forum. | **NRS.05.01.01.c.** Communicate a natural resource message through the press, radio, television or public appearances. | |

## Career Cluster: AGRICULTURE, FOOD AND NATURAL RESOURCES (AFNR)

### Career Pathway: Plant Systems (PS)

***Pathway Content Standard:*** The student will demonstrate competence in the application of scientific principles and techniques to the production and management of plants.

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PS.01. Performance Element: Apply knowledge of plant classification, plant anatomy and plant physiology to the production and management of plants.** | | | |
| **PS.01.01. Performance Indicator:** Classify agricultural plants according to taxonomy systems. | | | Science: C3 |
| **PS.01.01.01.a.** Explain systems used to classify plants. | **PS.01.01.01.b.** Compare and contrast the hierarchical classification of agricultural plants. | **PS.01.01.01.c.** Classify agricultural plants according to the hierarchical classification system, life cycles, plant use and as monocotyledons or dicotyledons. | |
| **PS.01.01.02.a.** Describe the morphological characteristics used to identify agricultural plants. | **PS.01.01.02.b.** Identify agriculturally important plants by common names. | **PS.01.01.02.c.** Identify agriculturally important plants by scientific names. | |
| **PS.01.02. Performance Indicator:** Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems. | | | Science: B6, C3 and C5 |
| **PS.01.02.01.a.** Diagram a typical plant cell and identify plant cell organelles and their functions. | **PS.01.02.01.b.** Compare and contrast mitosis and meiosis. | **PS.01.02.01.c.** Apply the knowledge of cell differentiation and the functions of the major types of cells to plant systems. | |
| **PS.01.02.02.a.** Identify the components, the types and the functions of plant roots. | **PS.01.02.02.b.** Identify root tissues and explain the pathway of water and nutrients into and through the root tissues. | **PS.01.02.02.c.** Relate the active and passive transport of minerals into and through the root system to plant nutrition. | |
| **PS.01.02.03.a.** Identify the components and the functions of plant stems. | **PS.01.02.03.b.** Describe the processes of translocation. | **PS.01.02.03.c.** Apply concepts associated with translocation to the management of plants. | |
| **PS.01.02.04.a.** Discuss leaf morphology and the functions of leaves. | **PS.01.02.04.b.** Explain how leaves capture light energy and allow for the exchange of gases. | **PS.01.02.04.c.** Explain the relationships between leaf structure and functions and plant management practices. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PS.01.02.05.a.** Identify the components of a flower, the functions of a flower and the functions of flower components. | **PS.01.02.05.b.** Identify the different types of flowers and flower forms. | **PS.01.02.05.c.** Apply the knowledge of flower structures to plant breeding, production and use. | |
| **PS.01.02.06.a.** Explain the functions and components of seeds and fruit. | **PS.01.02.06.b.** Identify the major types of fruit. | **PS.01.02.06.c.** Apply the knowledge of seed and fruit structures to plant culture and use. | |
| **PS.01.03. Performance Indicator:** Apply knowledge of plant physiology and energy conversion to plant systems. | | | Science: B6 and C5 |
| **PS.01.03.01.a.** Explain the basic process of photosynthesis and its importance to life on Earth. | **PS.01.03.01.b.** Explain requirements necessary for photosynthesis to occur and identify the products and byproducts of photosynthesis. | **PS.01.03.01.c.** Explain the light-dependent and light-independent reactions that occur during photosynthesis and apply the knowledge to plant management. | |
| **PS.01.03.02.a.** Explain cellular respiration and its importance to plant life. | **PS.01.03.02.b.** Explain factors that affect cellular respiration and identify the products and byproducts of cellular respiration. | **PS.01.03.02.c.** Explain the four stages of aerobic respiration and relate cellular respiration to plant growth, crop management and post-harvest handling. | |
| **PS.01.03.03.a.** Define primary growth and the role of the apical meristem. | **PS.01.03.03.b.** Explain the process of secondary plant growth. | **PS.01.03.03.c.** Relate the principles of primary and secondary growth to plant systems. | |
| **PS.01.03.04.a.** Identify the five groups of naturally occurring plant hormones and synthetic plant growth regulators. | **PS.01.03.04.b.** Identify the plant responses to plant growth regulators and different forms of tropism. | **PS.01.03.04.c.** Select plant growth regulators to produce desired responses from plants. | |
| **PS.02. Performance Element: Prepare a plant management plan that addresses the influence of environmental factors, nutrients and soil on plant growth.** | | | |
| **PS.02.01. Performance Indicator:** Determine the influence of environmental factors on plant growth. | | | Science: C6 |
| **PS.02.01.01.a.** Describe the qualities of light that affect plant growth. | **PS.02.01.01.b.** Describe plant responses to light color, intensity and duration. | **PS.02.01.01.c.** Evaluate plant responses to varied light color, intensity and duration. | |
| **PS.02.01.02.a.** Describe the effects air, temperature and water have on plant metabolism and growth. | **PS.02.01.02.b.** Determine the optimal air, temperature and water conditions for plant growth. | **PS.02.01.02.c.** Design, implement and evaluate a plan to maintain optimal conditions for plant growth. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PS.02.02. Performance Indicator:** Prepare growing media for use in plant systems. | | | Science: B2 |
| **PS.02.02.01.a.** Identify the major components of growing media and describe how growing media support plant growth. | **PS.02.02.01.b.** Describe the physical characteristics of growing media and explain the influence they have on plant growth. | **PS.02.02.01.c.** Formulate and prepare growing media for specific plants or crops. | |
| **PS.02.02.02.a.** Identify the categories of soil water. | **PS.02.02.02.b.** Discuss how soil drainage and water-holding capacity can be improved. | **PS.02.02.02.c.** Determine the hydraulic conductivity for soil and how the results influence irrigation practices. | |
| **PS.02.03. Performance Indicator:** Develop and implement a fertilization plan for specific plants or crops. | | | Math: 4B<br>Science: A2 |
| **PS.02.03.01.a.** Identify the essential nutrients for plant growth and development and their major functions. | **PS.02.03.01.b.** Describe nutrient deficiency symptoms and recognize environmental causes of nutrient deficiencies. | **PS.02.03.01.c.** Monitor plants for signs of nutrient deficiencies and prepare a scouting report. | |
| **PS.02.03.02.a.** Discuss the influence of pH and cation exchange capacity on the availability of nutrients. | **PS.02.03.02.b.** Contrast pH and cation exchange capacity between mineral soil and soilless growing media. | **PS.02.03.02.c.** Adjust the pH of growing media. | |
| **PS.02.03.03.a.** Collect soil and plant tissue samples for testing and interpret the test results. | **PS.02.03.03.b.** Determine the nutrient content of soil using appropriate laboratory procedures and prescribe fertilization based on results. | **PS.02.03.03.c.** Determine the nutrient content of plant tissue samples using appropriate laboratory procedures and prescribe fertilization based on results. | |
| **PS.02.03.04.a.** Identify fertilizer sources of essential plant nutrients, explain fertilizer formulations and describe different methods of fertilizer application. | **PS.02.03.04.b.** Calculate the amount of fertilizer to be applied and calibrate equipment to apply the prescribed amount of fertilizer. | **PS.02.03.04.c.** Use variable-rate technology to apply fertilizers to meet crop nutrient needs. | |
| **PS.03. Performance Element: Propagate, culture and harvest plants.** | | | |
| **PS.03.01. Performance Indicator:** Demonstrate plant propagation techniques. | | | Science: C2 |
| **PS.03.01.01.a.** Explain pollination, cross-pollination and self-pollination of flowering plants. | **PS.03.01.01.b.** Diagram the process of plant fertilization. | **PS.03.01.01.c.** Design and implement a plan to control the pollination of plants. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PS.03.01.02.a.** Demonstrate sowing techniques and provide favorable conditions for seed germination. | **PS.03.01.02.b.** Handle seed to overcome seed dormancy mechanisms and to maintain seed viability and vigor. | **PS.03.01.02.c.** Conduct tests associated with seed germination rates, viability and vigor. | |
| **PS.03.01.03.a.** Describe optimal conditions for asexual propagation and demonstrate techniques used to propagate plants by cuttings, division, separation and layering. | **PS.03.01.03.b.** Demonstrate proper procedures in budding or grafting selected materials. | **PS.03.01.03.c.** Evaluate asexual propagation practices based on productivity and efficiency. | |
| **PS.03.01.04.a.** Define micropropagation, discuss advantages associated with the practice and outline the four main stages of the process. | **PS.03.01.04.b.** Demonstrate aseptic micropropagation techniques. | **PS.03.01.04.c.** Propagate plants by micropropagation. | |
| **PS.03.01.05.a.** Explain the principles behind recombinant DNA technology and the basic steps in the process. | **PS.03.01.05.b.** Give examples of the risks and advantages associated with genetically modified plants. | **PS.03.01.05.c.** Evaluate the performance of genetically modified crops. | |
| **PS.03.02. Performance Indicator:** Develop and implement a plant management plan for crop production. | | | Science: C5 and C6<br>Language Arts: 7 |
| **PS.03.02.01.a.** Explain the importance of starting with pest- and disease-free propagation material. | **PS.03.02.01.b.** Inspect propagation material for evidence of pests or disease. | **PS.03.02.01.c.** Produce pest- and disease-free propagation material. | |
| **PS.03.02.02.a.** Explain the reasons for preparing growing media before planting. | **PS.03.02.02.b.** Prepare soil for planting with the addition of amendments. | **PS.03.02.02.c.** Prepare growing media for planting. | |
| **PS.03.02.03.a.** Demonstrate proper planting procedures and post-planting care. | **PS.03.02.03.b.** Apply pre-plant treatments required of seeds and plants and evaluate the results. | **PS.03.02.03.c.** Operate mechanized planting equipment. | |
| **PS.03.02.04.a.** Observe and record environmental conditions during the germination, growth and development of a crop. | **PS.03.02.04.b.** Monitor the progress of plantings and determine the need to adjust environmental conditions. | **PS.03.02.04.c.** Prepare and implement a plant production schedule based on predicted environmental conditions. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PS.03.02.05.a.** Explain the reasons for controlling plant growth. | **PS.03.02.05.b.** Demonstrate proper techniques to control and manage plant growth through mechanical, cultural or chemical means. | **PS.03.02.05.c.** Create and implement a plan to control and manage plant growth. | |
| **PS.03.03. Performance Indicator:** Develop and implement a plan for integrated pest management. | | | Science: C4 and C6<br>Language Arts: 7 |
| **PS.03.03.01.a.** Identify types of plant pests and disorders. | **PS.03.03.01.b.** Identify major local weeds, insect pests and infectious and noninfectious plant diseases. | **PS.03.03.01.c.** Design and implement a crop scouting program. | |
| **PS.03.03.02.a.** Describe damage caused by plant pests and diseases. | **PS.03.03.02.b.** Diagram the life cycles of major plant pests and diseases. | **PS.03.03.02.c.** Predict pest and disease problems based on environmental conditions and life cycles. | |
| **PS.03.03.03.a.** Describe pest control strategies associated with integrated pest management. | **PS.03.03.03.b.** Describe types of pesticide controls and formulations. | **PS.03.03.03.c.** Employ pest management strategies to manage pest populations, assess the effectiveness of the plan and adjust the plan as needed. | |
| **PS.03.03.04.a.** Explain risks and benefits associated with the materials and methods used in plant pest management. | **PS.03.03.04.b.** Explain procedures for the safe handling, use and storage of pesticides. | **PS.03.03.04.c.** Evaluate environmental and consumer concerns regarding pest management strategies. | |
| **PS.03.04. Performance Indicator:** Apply principles and practices of sustainable agriculture to plant production. | | | Science: F3, F4 and F6 |
| **PS.03.04.01.a.** Explain sustainable agriculture and objectives associated with the strategy. | **PS.03.04.01.b.** Describe sustainable agriculture practices and compare the ecological effects of traditional agricultural practices with those of sustainable agriculture. | **PS.03.04.01.c.** Prepare and implement a plan for an agricultural enterprise that involves practices in support of sustainable agriculture. | |
| **PS.03.05. Performance Indicator:** Harvest, handle and store crops. | | | Science: F5 |
| **PS.03.05.01.a.** Identify harvesting methods and harvesting equipment. | **PS.03.05.01.b.** Assess the stage of growth to determine crop maturity or salability and demonstrate proper harvesting techniques. | **PS.03.05.01.c.** Operate mechanized harvesting equipment. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PS.03.05.02.a.** Explain reasons for calculating crop yield and loss. | **PS.03.05.02.b.** Evaluate crop yield and loss data. | **PS.03.05.02.c.** Implement plans to reduce crop loss. | |
| **PS.03.05.03.a.** Identify storage methods for plants and plant products. | **PS.03.05.03.b.** Explain the proper conditions to maintain the quality of plants and plant products held in storage. | **PS.03.05.03.c.** Monitor environmental conditions in storage facilities for plants and plant products. | |
| **PS.03.05.04.a.** Explain the reasons for preparing plants and plant products for distribution. | **PS.03.05.04.b.** Demonstrate techniques for grading, handling and packaging plants and plant products for distribution. | **PS.03.05.04.c.** Evaluate techniques for grading, handling and packaging plants and plant products. | |
| **PS.04. Performance Element: Employ elements of design to enhance an environment.** | | | |
| **PS.04.01. Performance Indicator:** Create designs using plants. | | | Language Arts: 12 |
| **PS.04.01.01.a.** Define design and identify design elements. | **PS.04.01.01.b.** Explain design elements of line, form, texture and color and express the visual effect each has on the viewer. | **PS.04.01.01.c.** Select plants, hard goods, supplies and other materials for use in a design based on a range of criteria. | |
| **PS.04.01.02.a.** Discuss the applications of art in agriculture/horticulture. | **PS.04.01.02.b.** Discuss principles of design that form the basis of artistic impression. | **PS.04.01.02.c.** Create and implement designs by following established principles of art. | |

## Career Cluster: AGRICULTURE, FOOD AND NATURAL RESOURCES (AFNR)

### Career Pathway: Power, Structural and Technical Systems (PST)

***Pathway Content Standard:*** The student will demonstrate competence in the application of principles and techniques for the development and management of power, structural and technical systems.

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PST.01. Performance Element: Use physical science principles and engineering applications with power, structural and technical systems to solve problems and improve performance.** | | | |
| **PST.01.01. Performance Indicator:** Select energy sources in power generation appropriate to the situation. | | | Science: B5, D1 and F3 |
| **PST.01.01.01.a.** Identify renewable and nonrenewable energy sources and pathways of delivery. | **PST.01.01.01.b.** Examine environmental impacts and efficiencies of energy sources. | **PST.01.01.01.c.** Compare the efficiency of energy production from various sources. | |
| **PST.01.02. Performance Indicator:** Apply physical science laws and principles to identify, classify and use lubricants. | | | Science: B4 |
| **PST.01.02.01.a.** Classify lubricants by source, sustainability and equipment compatibility. | **PST.01.02.01.b.** Classify lubricants by SAE viscosity and API service classifications. | **PST.01.02.01.c.** Select, use and dispose of lubricants. | |
| **PST.01.03. Performance Indicator:** Identify and use hand and power tools and equipment for service, construction and fabrication. | | | Science: E2 |
| **PST.01.03.01.a.** Identify and demonstrate safe use and maintenance of measurement and layout tools. | **PST.01.03.01.b.** Select, maintain and use hand and power tools in service, construction and fabrication. | **PST.01.03.01.c.** Assess the performance of employees in use of hand and power tools to safely and efficiently service, construct and fabricate quality products. | |
| **PST.02. Performance Element: Design, operate and maintain mechanical equipment, structures, biological systems, land treatment, power and technology.** | | | |
| **PST.02.01. Performance Indicator:** Perform service routines to maintain power units and equipment. | | | Science: E2 |
| **PST.02.01.01.a.** Identify and schedule power unit and equipment lubrication. | **PST.02.01.01.b.** Ensure the presence and function of safety systems and hardware on tools and equipment. | **PST.02.01.01.c.** Test and service electrical systems. | |
| **PST.02.01.02.a.** Service filtration systems and maintain fluid levels on power units and equipment. | **PST.02.01.02.b.** Adjust equipment, including belts and drives, chains and sprockets, and maintain fluid conveyance components, such as hoses, lines and nozzles. | **PST.02.01.02.c.** Troubleshoot malfunctions and failures in equipment using computer and on-board diagnostics. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PST.02.01.03.a.** Maintain the cleanliness and appearance of power units and equipment to assure functionality. | **PST.02.01.03.b.** Develop a preventive maintenance schedule for power units and equipment. | **PST.02.01.03.c.** Maintain and calibrate metering, monitoring and sensing devices on equipment. | |
| **PST.02.02. Performance Indicator:** Operate, service and diagnose the condition of power units and equipment. | | | Science: E2 |
| **PST.02.02.01.a.** Identify power unit and equipment controls and instruments, along with their functions. | **PST.02.02.01.b.** Perform start-up and shut-down procedures on power units and equipment as specified in technical manuals. | **PST.02.02.01.c.** Select power units and equipment for operational efficiencies. | |
| **PST.02.02.02.a.** Perform pre-operation inspection according to manufacturers' specifications and/or prevailing industry standards. | **PST.02.02.02.b.** Demonstrate safe practices and regulations in the operation of power units and equipment. | **PST.02.02.02.c.** Adjust equipment for safe and efficient operation. | |
| **PST.03. Performance Element: Service and repair mechanical equipment and power systems.** | | | |
| **PST.03.01. Performance Indicator:** Troubleshoot and repair internal combustion engines. | | | Science: A1 and A4<br>Language Arts: 3 |
| **PST.03.01.01.a.** Identify components and systems of internal combustion engines. | **PST.03.01.01.b.** Utilize technical manuals and computer-based diagnostics in engine analysis and repair. | **PST.03.01.01.c.** Performance test internal combustion engines to determine service and repair needs. | |
| **PST.03.01.02.a.** Describe the operation of internal combustion engines by types of fuel used. | **PST.03.01.02.b.** Analyze and troubleshoot internal combustion engines. | **PST.03.01.02.c.** Overhaul spark-and-compression internal combustion engines. | |
| **PST.03.02. Performance Indicator:** Utilize manufacturers' guidelines to service and repair the power transmission systems of equipment. | | | Math: 1C and 6B<br>Science: B4 and E1 |
| **PST.03.02.01.a.** Identify and describe applications of simple machines in power systems. | **PST.03.02.01.b.** Identify and compare operation principles and features, benefits and applications of various power transmission systems. | **PST.03.02.01.c.** Use speed, torque and power measurements to improve efficiency in power transmission systems. | |
| **PST.03.02.02.a.** Calculate mechanical advantage in mechanical systems. | **PST.03.02.02.b.** Describe features, benefits and applications of mechanical transmission components, including belts, chains, gears, bearings, seals, universals and drive shafts. | **PST.03.02.02.c.** Inspect, analyze and repair hydrostatic transmissions. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PST.03.02.03.a.** Identify power transfer principles, including those using friction, gears and fluids. | **PST.03.02.03.b.** Inspect, analyze and repair clutches and brakes. | **PST.03.02.03.c.** Inspect, analyze and repair differentials, final drives, transmissions (including gear-type and power-shift transmissions) and auxiliary drives. | |
| **PST.03.03. Performance Indicator:** Service and repair hydraulic and pneumatic systems. | | | Science: B4 and E1 |
| **PST.03.03.01.a.** Describe features, benefits and applications of common types of hydraulic and pneumatic systems. | **PST.03.03.01.b.** Describe principles of hydraulic and pneumatic system operation. | **PST.03.03.01.c.** Utilize symbols and schematic drawings in the maintenance of hydraulic and pneumatic systems. | |
| **PST.03.03.02.a.** Apply hydrostatic and hydrodynamic principles in hydraulics and pneumatics, including Archimedes' principle and Pascal's law. | **PST.03.03.02.b.** Identify major components of hydraulic and pneumatic systems and describe their use. | **PST.03.03.02.c.** Inspect, analyze and repair hydraulic and pneumatic system components, including fluid and compressed-air conveyance components. | |
| **PST.03.03.03.a.** Evaluate hydraulic and pneumatic system functionality. | **PST.03.03.03.b.** Identify hydraulic and pneumatic system fittings and ports. | **PST.03.03.03.c.** Use a pressure-and-flow tester in diagnosing malfunctions and repairing hydraulic and pneumatic systems. | |
| **PST.03.04. Performance Indicator:** Troubleshoot and service electrical systems. | | | Math: 6B<br>Science: E1 |
| **PST.03.04.01.a.** Apply the meaning and measurement of electricity, including amperage, voltage and wattage. | **PST.03.04.01.b.** Assess and install electrical circuits, including conductors, insulators and controls. | **PST.03.04.01.c.** Evaluate power unit and equipment electrical systems, including ignition, lighting, auxiliary and electronic braking. | |
| **PST.03.04.02.a.** Identify the kinds and applications of electricity, including direct and alternating current. | **PST.03.04.02.b.** Interpret electrical system symbols and diagrams. | **PST.03.04.02.c.** Assess and repair malfunctioning electrical systems and components, such as battery, lighting, instrumentation and accessories. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PST.03.05. Performance Indicator:** Service vehicle heating and air-conditioning systems. | | | Math: 4A and 6C |
| **PST.03.05.01.a.** Identify principles of heat and temperature measurement. | **PST.03.05.01.b.** Describe physical principles of operation of vehicle heating and air-conditioning systems and interpret symbols and diagrams used with such systems. | **PST.03.05.01.c.** Troubleshoot, repair and evacuate and charge heating and air-conditioning components, including compressors, expansion valves, receiver dryers, pumps, hoses and recovery tools and systems. | |
| **PST.03.06. Performance Indicator:** Service and repair steering, suspension, traction and vehicle performance systems. | | | Math: 4A and 6C |
| **PST.03.06.01.a.** Identify and explain principles of motion, including speed, velocity and acceleration. | **PST.03.06.01.b.** Evaluate vehicle traction, ballasting and weight transfer and service as needed. | **PST.03.06.01.c.** Evaluate vehicle stability, power-hop, creep-crawl, wheel slip and tractive performance and service as needed. | |
| **PST.03.06.02.a.** Identify principles of force on acceleration, including friction and gravity. | **PST.03.06.02.b.** Evaluate vehicle performance and then service as needed, including horsepower management, ballasting, soil compaction and fuel efficiency. | **PST.03.06.02.c.** Evaluate vehicle suspension and steering systems and service as needed. | |
| **PST.04. Performance Element: Plan, build and maintain agricultural structures.** | | | |
| **PST.04.01. Performance Indicator:** Create sketches and plans of agricultural structures. | | | Math: 4A<br>Science: A3 and E1 |
| **PST.04.01.01.a.** Identify symbols and drawing techniques used to develop plans and sketches. | **PST.04.01.01.b.** Develop plans and sketches using drafting equipment and computer programs. | **PST.04.01.01.c.** Apply principles of design, fabrication and installation of agricultural structures. | |
| **PST.04.01.02.a.** Prepare bills of materials to accompany plans and sketches. | **PST.04.01.02.b.** Use scale measurement and dimension to develop plans and sketches. | **PST.04.01.02.c.** Design functional and efficient facilities for agricultural use. | |
| **PST.04.02. Performance Indicator:** Apply structural plans, specifications and building codes. | | | Language Arts: 12 |
| **PST.04.02.01.a.** Identify major parts of a construction drawing. | **PST.04.02.01.b.** Identify and interpret different views of a construction drawing. | **PST.04.02.01.c.** Locate, explain and apply elements of a construction drawing. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PST.04.02.02.a.** Identify the sources and importance of industry construction and materials standards, including those of the American National Standards Institute (ANSI) and Underwriters' Laboratories (UL). | **PST.04.02.02.b.** Identify local code enforcement agencies and procedures. | **PST.04.02.02.c.** Follow local construction and safety codes and specifications in agricultural construction. | |
| **PST.04.02.03.a.** Identify design and construction recommendations and practices in agricultural structures. | **PST.04.02.03.b.** Read and interpret local structural code information. | **PST.04.02.03.c.** Complete appropriate local permit applications for a construction project. | |
| **PST.04.03. Performance Indicator:** Examine structural requirements for materials and procedures and estimate construction cost. | | | Math: 1C and 6B |
| **PST.04.03.01.a.** Identify criteria in selecting materials in agricultural construction/fabrication. | **PST.04.03.01.b.** Select types of materials, determine quantities and estimate their costs and other costs associated with a specified project plan. | **PST.04.03.01.c.** Prepare a project cost estimate, including materials, labor and management. | |
| **PST.04.03.02.a.** Explain the importance and use of requests for construction bids. | **PST.04.03.02.b.** Establish business relationships with vendors of materials and services used in agricultural construction. | **PST.04.03.02.c.** Prepare a bid package for a planned construction project, including construction timelines, site evaluation, construction plans and related management factors. | |
| **PST.04.04. Performance Indicator:** Follow architectural and mechanical plans to construct and/or repair equipment, buildings and facilities. | | | Math: 1C, 4A and 4B<br>Science: E2 |
| **PST.04.04.01.a.** Construct and/or repair with wood and metal. | **PST.04.04.01.b.** Install and/or repair pipes and plumbing equipment and fixtures. | **PST.04.04.01.c.** Evaluate work products or samples for quality and efficiency of workmanship following architectural and mechanical plans. | |
| **PST.04.04.02.a.** Identify electricity measurements and make measurement calculations. | **PST.04.04.02.b.** Distinguish electrical circuits and components of each. | **PST.04.04.02.c.** Install and/or repair electrical wiring components and fixtures following appropriate codes and standards. | |
| **PST.04.04.03.a.** Calculate areas and volumes for coatings. | **PST.04.04.03.b.** Paint or protect with coatings. | **PST.04.04.03.c.** Electroplate or otherwise coat materials. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PST.04.04.04.a.** Calculate efficiencies gained through insulation. | **PST.04.04.04.b.** Identify insulation materials and methods to achieve desired R-value. | **PST.04.04.04.c.** Insulate a structure. | |
| **PST.04.04.05.a.** Measure and calculate materials for concrete, brick, stone or masonry units in agricultural construction. | **PST.04.04.05.b.** Construct and/or repair with concrete, brick, stone or masonry units. | **PST.04.04.05.c.** Seal, pigment and otherwise prepare concrete, brick, stone or masonry unit surfaces. | |
| **PST.04.04.06.a.** Measure and calculate fencing materials. | **PST.04.04.06.b.** Construct and/or repair fencing, including wood, static wire, electrical wire and other fencing materials. | **PST.04.04.06.c.** Comply with government regulations and applicable fencing and installation codes. | |
| **PST.04.04.07.a.** Identify kinds and characteristics of metal materials. | **PST.04.04.07.b.** Distinguish welding processes, positions, and materials preparation. | **PST.04.04.07.c.** Construct and/or repair metal structures and equipment using welding fabrication procedures, including those associated with SMAW, GMAW, GTAW, fuel-oxygen and plasma arc torch methods. | |
| **PST.04.04.08.a.** Measure and calculate glass, rigid plastic panels and film plastics for job requirements. | **PST.04.04.08.b.** Install glass, ridged plastic panels and/or film plastics. | **PST.04.04.08.c.** Develop maintenance and service plans for glass, ridged plastic panel, and film plastics installations. | |
| **PST.05. Performance Element: Apply technology principles in the use of agricultural technical systems.** | | | |
| **PST.05.01. Performance Indicator:** Use instruments and meters to test and monitor electrical and electronic processes. | | | Math: 4B<br>Science: A3 |
| **PST.05.01.01.a.** Discuss various types and sources of electricity. | **PST.05.01.01.b.** Use volt and amp meters and continuity testers to demonstrate electricity principles. | **PST.05.01.01.c.** Locate and use electrical codes and regulations. | |
| **PST.05.02. Performance Indicator:** Prepare and/or use electrical drawings to design, install and troubleshoot control systems. | | | Science: E1 |
| **PST.05.02.01.a.** Recognize common electrical symbols. | **PST.05.02.01.b.** Read and design schematic drawings for an electrical control system. | **PST.05.02.01.c.** Identify and use electrical control system components, including transistors, relays, HVAC and logic controllers. | |

| Level I | Level II | Level III | National Academic Standard Grade-Level Expectation |
|---|---|---|---|
| **PST.05.02.02.a.** Identify uses of electrical sensors and controls. | **PST.05.02.02.b.** Interpret maintenance schedules for electrical control systems. | **PST.05.02.02.c.** Troubleshoot electrical control system performance problems. | |
| **PST.05.02.03.a.** Identify hazards and safety practices in planning, installing and using electricity. | **PST.05.02.03.b.** Distinguish and select materials and tools used in electrical control circuit installation. | **PST.05.02.03.c.** Plan and install electrical control circuits to assure proper operation. | |
| **PST.05.02.04.a.** Identify the importance and uses of computer-based systems in agriculture, food and natural resources. | **PST.05.02.04.b.** Delineate the functions of programmable logic controllers (PLC) in agricultural production and manufacturing. | **PST.05.02.04.c.** Develop and implement control systems using programmable logic controllers (PLC) and/or other computer-based systems that operate as specified. | |
| **PST.05.02.05.a.** Use common computer-based programs to analyze agricultural data. | **PST.05.02.05.b.** Assess database summaries to draw conclusions and propose plans of action. | **PST.05.02.05.c.** Use computer-based data acquisition devices and sensors to statistically analyze and interpret data. | |
| **PST.05.03. Performance Indicator:** Use geospatial technologies in agricultural applications. | | | Science: A3, E2 and F6<br>Social Studies: 3c |
| **PST.05.03.01.a.** Identify geospatial technologies, including global positioning, geographical information and remote sensing. | **PST.05.03.01.b.** Explain and evaulate concepts and principles of geospatial technologies. | **PST.05.03.01.c.** Assess and install instrumentation and data acquisition systems, including Global Positioning System (GPS) receivers. | |
| **PST.05.03.02.a.** Explain site-specific agriculture as related to geospatial technologies. | **PST.05.03.02.b.** Describe equipment and processes used in geospatial technologies. | **PST.05.03.02.c.** Output and apply maps using GIS/GPS systems. | |
| **PST.05.03.03.a.** Identify uses, components and setup of precision technology in agriculture, food and natural resources. | **PST.05.03.03.b.** Describe principles of precision agriculture for map- and sensor-based systems. | **PST.05.03.03.c.** Demonstrate geospatial applications, including calibration, volumetric controlling and electrical design. | |
| **PST.05.03.04.a.** Describe the meaning and use of sensors, controllers and actuators. | **PST.05.03.04.b.** Identify sensor, control, and actuator system components on power units and equipment. | **PST.05.03.04.c.** Diagnose malfunctions and repair control systems and sensors, including those of engines, transmissions and implements. | |

# APPENDIX

# National Academic Content Standards Aligned to AFNR Standards

National academic standards for mathematics, science, English language arts and social studies are reported below. The statements are based on information in reports of the respective associations/organizations in the academic areas. Some adjustment of numbering was done to facilitate the process of alignment with the standards that have been developed in the pathways of the Agriculture, Food and Natural Resources (AFNR) Career Cluster.

The approach was to determine the presence of alignment between the content standards, expectations or thematic strands of the four academic areas and the performance indicators of the AFNR standards. Supporting statements have been included to clarify content of the respective content standards, expectations or thematic strands. The statements were initially developed independently by the respective organizations and, therefore, are not parallel in wording and presentation. Occasionally minor editing was done to adjust the background or stem of a statement but not the statement itself.

## Mathematics

The mathematics standards presented here are for high schools and are taken from the publication entitled ***Principles and Standards for School Mathematics***, published by The National Council of Teachers of Mathematics, Inc., 2000.

1. Standard and Expectations: Number and Operations

   *Instructional programs should enable all students to:*

   1A. Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

   1B. Understand meanings of operations and how they relate to one another.

   1C. Compute fluently and make reasonable estimates.

2. Standard and Expectations: Algebra

*Instructional programs should enable all students to:*

2A. Understand patterns, relations, and functions.

2B. Represent and analyze mathematical situations and structures using algebraic symbols.

2C. Use mathematical models to represent and understand quantitative relationships.

2D. Analyze change in various contexts.

3. Standard and Expectations: Geometry

*Instructional programs should enable all students to:*

3A. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.

3B. Specify locations and describe spatial relationships using coordinate geometry and other representational systems.

3C. Apply transformations and use symmetry to analyze mathematical situations.

3D. Use visualization, spatial reasoning, and geometric modeling to solve problems.

4. Standard and Expectations: Measurement

*Instructional programs should enable all students to:*

4A. Understand measurable attributes of objects and the units, systems, and processes of measurement.

4B. Apply appropriate techniques, tools, and formulas to determine measurements.

5. Standard and Expectations: Data Analysis and Probability

*Instructional programs should enable all students to:*

5A. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

5B. Select and use appropriate statistical methods to analyze data.

5C. Develop and evaluate inferences and predictions that are based on data.

5D. Understand and apply basic concepts of probability.

6. Standard and Expectations: Problem Solving

*Instructional programs should enable all students to:*

6A. Build new mathematical knowledge through problem solving.

6B. Solve problems that arise in mathematics in other contexts.

6C. Apply and adapt a variety of appropriate strategies to solve problems.

6D. Monitor and reflect on the process of mathematical problem solving.

7. Standard and Expectations: Reasoning and Proof

*Instructional programs should enable all students to:*

7A. Recognize reasoning and proof as fundamental aspects of mathematics.

7B. Make and investigate mathematical conjectures.

7C. Develop and evaluate mathematical arguments and proofs.

7D. Select and use various types of reasoning and methods of proof.

8. Standard and Expectations: Communication

*Instructional programs should enable all students to:*

8A. Organize and consolidate their mathematical thinking through communication.

8B. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.

8C. Analyze and evaluate the mathematical thinking and strategies of others.

8D. Use the language of mathematics to express mathematical ideas precisely.

9. Standard and Expectations: Connections

*Instructional programs should enable all students to:*

9A. Recognize and use connections among mathematical ideas.

9B. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.

9C. Recognize and apply mathematics in contexts outside of mathematics.

10. Standard and Expectations: Representation

*Instructional programs should enable all students to:*

10A. Create and use representations to organize, record, and communicate mathematical ideas.

10B. Select, apply, and translate among mathematical representations to solve problems.

10C. Use representations to model and interpret physical, social, and mathematical phenomena.

## Science

The science content standards and their underlying abilities and concepts presented here are for grades 9–12. These are from the ***National Science Education Standards***, published by the National Academy of Sciences, 1996.

A. Content Standard: Science as Inquiry

*As a result of their activities in grades 9–12, all students should develop the ability to:*

A1. Identify questions and concepts that guide scientific investigation.

A2. Design and conduct scientific investigations.

A3. Use technology and mathematics to improve investigations and communications.

A4. Formulate and revise scientific explanations and models using logic and evidence.

A5. Recognize and analyze alternative explanations and models.

A6. Communicate and defend a scientific argument.

B. Content Standard: Physical Science

*As a result of their activities in grades 9–12, all students should develop an understanding of:*

B1. Structure of atoms.

B2. Structure and properties of matter.

B3. Chemical reactions.

B4. Motions and forces.

B5. Conservation of energy and increase in disorder.

B6. Interactions of energy and matter.

C. Content Standard: Life Science

*As a result of their activities in grades 9–12, all students should develop an understanding of:*

C1. The cell.

C2. Molecular basis of heredity.

C3. Biological evolution.

C4. Interdependence of organisms.

C5. Matter, energy, and organization in living systems.

C6. Behavior of organisms.

D. Content Standard: Earth and Space Science

*As a result of their activities in grades 9–12, all students should develop an understanding of:*

D1. Energy in the earth system.

D2. Geochemical cycles.

D3. Origin and evolution of the earth system.

D4. Origin and evolution of the universe.

E. Content Standard: Science and Technology

*As a result of their activities in grades 9–12, all students should develop:*

E1. Abilities of technological design.

E2. Understanding about science and technology.

F. Content Standard: Science in Personal and Social Perspectives

*As a result of their activities in grades 9–12, all students should develop understanding of:*

F1. Personal and community health.

F2. Population growth.

F3. Natural resources.

F4. Environmental quality.

F5. Natural and human-induced hazards.

F6. Science and technology in local, national, and global challenges.

G. Content Standard: History and Nature of Science

*As a result of their activities in grades 9–12, all students should develop understanding of:*

G1. Science as human endeavor.

G2. Nature of scientific knowledge.

G3. Historical perspectives.

## English Language Arts

The English language arts standards presented here are for high schools. They were taken from a document entitled ***Standards for the English Language Arts***, copyright 1996 by the International Reading Association and the National Council of Teachers of English.

1. Standard: Students read a wide range of print and nonprint texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.

2. Standard: Students read a wide range of literature from many periods in many genres to build an understanding of the many dimensions (e.g., philosophical, ethical, aesthetic) of human experience.

3. Standard: Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).

4. Standard: Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.

5. Standard: Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.

6. Standard: Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and nonprint texts.

7. Standard: Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and

nonprint texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.

8. Standard: Students use a variety of technological and informational resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.

9. Standard: Students develop an understanding of and respect for diversity in language use, patterns, and dialects across cultures, ethnic groups, geographic regions, and social roles.

10. Standard: Students whose first language is not English make use of their first language to develop competency in the English language arts and to develop understanding of content across the curriculum.

11. Standard: Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities.

12. Standard: Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

## Social Studies

The social studies standards and performance expectations presented here are for high schools. They are organized by thematic strands according to information in the document entitled ***Curriculum Standards for Social Studies***, published by the National Council for the Social Studies, 1994.

1. Thematic Strand: Culture

   *Social studies programs should include experiences that provide for the study of culture and cultural diversity, so that the learner can:*

   1a. analyze and explain the ways groups, societies, and cultures address human needs and concerns;

   1b. predict how data and experiences may be interpreted by people from diverse cultural perspectives and frames of reference;

   1c. apply an understanding of culture and an integrated whole that explains the functions and interactions of language, literature, the arts, traditions, beliefs and values, and behavior patterns;

   1d. compare and analyze societal patterns for preserving and transmitting culture while adapting to environmental or social change;

1e. demonstrate the value of cultural diversity, as well as cohesion, within and across groups;

1f. interpret patterns of behavior reflecting values and attitudes that contribute or pose obstacles to cross-cultural understanding;

1g. construct reasoned judgments about specific cultural responses to persistent human issues;

1h. explain and apply ideas, theories, and modes of inquiry drawn from anthropology and sociology in the examination of persistent issues and social problems.

2. Thematic Strand: Time, Continuity, and Change

*Social studies programs should include experiences that provide for the study of the ways human beings view themselves in and over time, so that the learner can:*

2a. demonstrate that historical knowledge and the concept of time are socially influenced constructions that lead historians to be selective in the questions they seek to answer and the evidence they use;

2b. apply key concepts such as time, chronology, causality, change, conflict, and complexity to explain, analyze, and show connections among patterns of historical change and continuity;

2c. identify and describe significant historical periods and patterns of change within and across cultures, such as the development of ancient cultures and civilizations, the rise of nation-states, and social, economic, and political revolutions;

2d. systematically employ processes of critical historical inquiry to reconstruct and reinterpret the past, such as using a variety of sources and checking their credibility, validating and weighing evidence for claims, and searching for causality;

2e. investigate, interpret, and analyze multiple historical and contemporary viewpoints within and across cultures related to important events, recurring dilemmas, and persistent issues, while employing empathy, skepticism, and critical judgment;

2f. apply ideas, theories, and modes of historical inquiry to analyze historical and contemporary developments, and to inform and evaluate actions concerning public policy issues.

3. Thematic Strand: People, Places, and Environments

*Social studies programs should include experiences that provide for the study of people, places, and environments, so that the learner can:*

3a. refine mental maps of locales, regions, and the world that demonstrate understanding of relative location, direction, size, and shape;

3b. create, interpret, use, and synthesize information from various representations of the earth, such as maps, globes, and photographs;

3c. use appropriate resources, data sources, and geographic tools such as aerial photographs, satellite images, geographic information systems (GIS), map projects, and cartography to generate, manipulate, and interpret information such as atlases, data bases, grid systems, charts, graphs, and maps.

3d. calculate distance, scale, area, and density and distinguish spatial distribution patterns;

3e. describe, differentiate, and explain the relationships among various regional and global patterns of geographic phenomena such as land forms, soils, climate, vegetation, natural resources, and population;

3f. use knowledge of physical system changes such as seasons, climate and weather, and the water cycle to explain geographic phenomena;

3g. describe and compare how people create places that reflect culture, human needs, government policy, and current values and ideals as they design and build specialized buildings, neighborhoods, shopping centers, urban centers, industrial parks, and the like;

3h. examine, interpret, and analyze physical and cultural patterns and their interactions, such as land use, settlement patterns, cultural transmission of customs and ideas, and ecosystem changes;

3i. describe and assess ways that historical events have been influenced by, and have influenced, physical and human geographic factors in local, regional, national, and global settings;

3j. analyze and evaluate social and economic effects of environmental changes and crises resulting from phenomena such as floods, storms, and drought;

3k. propose, compare, and evaluate alternative policies for the use of land and other resources in communities, regions, nations, and the world.

4. Thematic Strand: Individual Development and Identity

   *Social studies programs should include experiences that provide for the study of individual development and identity, so that the learner can:*

   4a. articulate personal connections to time, place, and social/cultural systems;

   4b. identify, describe, and express appreciation for the influences of various historical and contemporary cultures on an individual's daily life;

   4c. describe the ways family, religion, gender, ethnicity, nationality, socioeconomic status, and other group and cultural influences contribute to the development of a sense of self;

   4d. apply concepts, methods, and theories about the study of human growth and development, such as physical endowment, learning, motivation, behavior, perception, and personality;

   4e. examine the interactions of ethnic, national, or cultural influences in specific situations or events;

   4f. analyze the role of perceptions, attitudes, values, and beliefs in the development of personal identity;

   4g. compare and evaluate the impact of stereotyping, conformity, acts of altruism, and other behaviors on individuals and groups;

   4h. work independently and cooperatively within groups and institutions to accomplish goals;

   4i. examine factors that contribute to and damage one's mental health and analyze issues related to mental health and behavioral disorders in contemporary society.

5. Thematic Strand: Individuals, Groups, and Institutions

   *Social studies programs should include experiences that provide for the study of interactions among individuals, groups, and institutions, so that the learner can:*

   5a. apply concepts such as role, status, and social class in describing the connections and interactions of individuals, groups, and institutions in society;

   5b. analyze group and institutional influences on people, events, and elements of culture in both historical and contemporary settings;

   5c. describe the various forms institutions take, and explain how they develop and change over time;

   5d. identify and analyze examples of tensions between expressions of individuality and efforts used to promote social conformity by groups and institutions;

5e. describe and examine belief systems basic to specific traditions and laws in contemporary and historical movements;

5f. evaluate the role of institutions in furthering both continuity and change;

5g. analyze the extent to which groups and institutions meet individual needs and promote the common good in contemporary and historical settings;

5h. explain and apply ideas and modes of inquiry drawn from behavioral science and social theory in the examination of persistent issues and social problems.

6. Thematic Strand: Power, Authority, and Governance

*Social studies programs should include experiences that provide for the study of how people create and change structures of power, authority, and governance, so that the learner can:*

6a. examine persistent issues involving the rights, roles, and status of the individual in relation to the general welfare;

6b. explain the purpose of government and analyze how its powers are acquired, used, and justified;

6c. analyze and explain ideas and mechanisms to meet needs and wants of citizens, regulate territory, manage conflict, establish order and security, and balance competing conceptions of a just society;

6d. compare and analyze the ways nations and organizations respond to conflicts between forces of unity and forces of diversity;

6e. compare different political systems (their ideologies, structures, institutions, processes, and political cultures) with that of the United States, and identify representative political leaders from selected historical and contemporary settings;

6f. analyze and evaluate conditions, actions, and motivations that contribute to conflict and cooperation within and among nations;

6g. evaluate the role of technology in communications, transportation, information-processing, weapons development, or other areas as it contributes to or helps resolve conflicts;

6h. explain and apply ideas, theories, and modes of inquiry drawn from political science to the examination of persistent issues and social problems;

6i. evaluate the extent to which governments achieve their stated ideals and policies at home and abroad;

6j. prepare a public policy paper and present and defend it before an appropriate forum in school or community.

7. Thematic Strand: Production, Distribution, and Consumption

*Social studies programs should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services, so that the learner can:*

7a. explain how the scarcity of productive resources (human, capital, technological, and natural) requires the development of economic systems to make decisions about how goods and services are to be produced and distributed;

7b. analyze the role that supply and demand, prices, incentives, and profits play in determining what is produced and distributed in a competitive market system;

7c. consider the costs and benefits to society of allocating goods and services through private and public sectors;

7d. describe relationships among the various economic institutions that comprise economic systems such as households, business firms, banks, government agencies, labor unions, and corporations;

7e. analyze the role of specialization and exchange in economic processes;

7f. compare how values and beliefs influence economic decisions in different societies;

7g. compare basic economic systems according to how rules and procedures deal with demand, supply, prices, the role of government, banks, labor and labor unions, savings and investments, and capital;

7h. apply economic concepts and reasoning when evaluating historical and contemporary social developments and issues;

7i. distinguish between the domestic and global economic systems, and explain how the two interact;

7j. apply knowledge of production, distribution, and consumption in the analysis of a public issue such as the allocation of health care or the consumption of energy, and devise an economic plan for accomplishing a socially desirable outcome related to that issue;

7k. distinguish between economics as a field of inquiry and the economy.

8. Thematic Strand: Science, Technology, and Society

*Social studies programs should include experiences that provide for the study of relationships among science, technology, and society, so that the learner can:*

8a. identify and describe both current and historical examples of the interaction and interdependence of science, technology, and society in a variety of cultural settings;

8b. make judgments about how science and technology have transformed the physical world and human society and our understanding of time, space, place, and human-environment interactions;

8c. analyze how science and technology influence the core values, beliefs, and attitudes of society, and how the core values, beliefs, and attitudes of society shape scientific and technological change;

8d. evaluate various policies that have been proposed as ways of dealing with social changes resulting from new technologies, such as genetically engineered plants and animals;

8e. recognize and interpret varied perspectives about human societies and the physical world using scientific knowledge, ethical standards, and technologies from diverse world cultures;

8f. formulate strategies and develop policies for influencing public discussions associated with technology-society issues, such as the greenhouse effect.

9. Thematic Strand: Global Connections

*Social studies programs should include experiences that provide for the study of global connections and interdependence, so that the learner can:*

9a. explain how language, art, music, belief systems, and other cultural elements can facilitate global understanding or cause misunderstanding;

9b. explain conditions and motivations that contribute to conflict, cooperation, and interdependence among groups, societies, and nations;

9c. analyze and evaluate the effects of changing technologies on the global community;

9d. analyze the causes, consequences, and possible solutions to persistent, contemporary, and emerging global issues, such as health, security, resource allocation, economic development, and environmental quality;

9e. analyze the relationships and tensions between national sovereignty and global interests in such matters as territory,

economic development, nuclear and other weapons, use of natural resources, and human rights;

9f. analyze and formulate policy statements demonstrating an understanding of concerns, standards, issues, and conflicts related to universal human rights;

9g. describe and evaluate the role of international and multinational organizations in the global arena;

9h. illustrate how individual behaviors and decisions connect with global systems.

10. Thematic Strand: Civic Ideals and Practices

*Social studies programs should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic, so that the learner can:*

10a. explain the origins and interpret the continuing influence of key ideals of the democratic republican form of government, such as individual human dignity, liberty, justice, equality, and the rule of law;

10b. identify, analyze, interpret, and evaluate sources and examples of citizens' rights and responsibilities;

10c. locate, access, analyze, organize, synthesize, evaluate, and apply information about selected public issues—identifying, describing, and evaluating multiple points of view;

10d. practice forms of civic discussion and participation consistent with the ideals of citizens in a democratic republic;

10e. analyze and evaluate the influence of various forms of citizen action on public policy;

10f. analyze a variety of public policies and issues from the perspective of formal and informal political factors;

10g. evaluate the effectiveness of public opinion in influencing and shaping public policy development and decision-making;

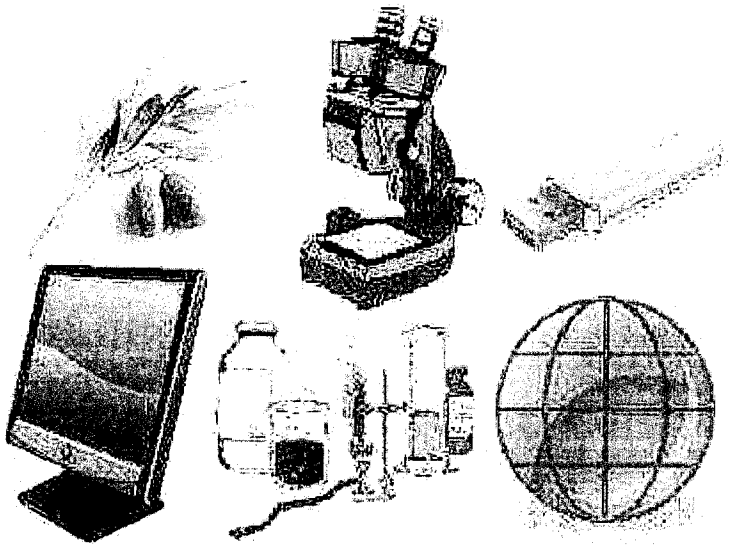
10h. evaluate the degree to which public policies and citizen behaviors reflect or foster the stated ideals of a democratic republican form of government;

10i. construct a policy statement and an action plan to achieve one or more goals related to an issue of public concern;

10j. participate in activities to strengthen the "common good," based upon careful evaluation of possible options for citizen action.

EXHIBIT 1
DATE 2/17/09
HB 464

# National Quality Program Standards For Secondary (Grades 9-12) Agricultural Education



A Project By

# The National Council for Agricultural Education

## INTRODUCTION

The National Quality Program Standards for Secondary (Grades 9-12) Agricultural Education are a result of a need to provide a consistent delivery of high quality agricultural education programs across the nation focused on relevant instruction, rigorous clear goals, continuous program improvement and the development of essential skills for student success. Input from local, state and national leaders was sought and obtained regarding the qualities of highly successful agricultural education programs.

The National Quality Program Standards for Secondary (Grades 9-12) Agricultural Education are designed to be used by the local teacher(s), administration, community partners and/or stakeholders, advisory committees, FFA Alumni and/or an external assessment team to conduct an evaluation of the local agricultural education program and develop clear goals and objectives for program improvement.

Each standard or standard statement is followed by a series of quality indicators/questions which further define or assess the standard or standard statement. The sum of the indicators scores serve as a ranking and determine if the standard or standard statement has been met. The sum of the indicator scores must reach the identified criteria score for meeting the standard or standard statement.

Local Program Success materials found in the National FFA Local Program Resource Guide may provide additional tools, resources and information to help agricultural education programs meet the standards and standard statements in this document.

### DEFINITIONS:

Standard or Standard Statement - A descriptive statement established and used as a model of quantitative characteristics for the development, management and assessment of secondary (Grades 9-12) Agricultural Education programs.

Quality Indicator – A measurement used to further define or measure the standard or standard statement.

### DIRECTIONS:

Reviewers should strive to rate the quality indicator based upon the level of criteria met.

The rating scale indicates the following:

Exemplary = 4

Promising = 3

Improving = 2

Struggling = 1

Non-Existent = 0

A Glossary and Definition of Terms is located in the back of this document.

## Supporting Organizations

The following organizations have reviewed the standards and quality indicators in this document and support it use for assessment of Secondary (Grades 9-12) Agricultural Education Programs.

Agricultural Education Policy Committee of the Association for Career & Technical Education

American Association for Agricultural Education (AAAE)

National Association of Agricultural Educators (NAAE)

National Association of Supervisors of Agricultural Education (NASAE)

National Council for Agricultural Education

National FFA Alumni Association

National FFA Foundation Sponsors Board

Seminis Seeds Division of Monsanto, Inc. - Glenn Stith, Vice President, NA & SA Operations and National FFA Foundation Board Chairman

Cargill, Incorporated - Jerry R. Rose, Corporate Vice President,

Deere & Company - Douglas C. DeVries, Senior Vice President, Agricultural Marketing - North America, Australia & Asia,

Wayne Farms LLC - Elton H. Maddox, President and Chief Executive Officer

Elanco Animal Health - Jeff Simmons, Executive Director North America Sales & Marketing

National FFA Organization Board of Directors

National Farm and Ranch Business Management Education Association. (NFRBMEA)

National Postsecondary Agricultural Student Organization (PAS)

National Young Farmer Educational Association (NYFEA)

## INDEX

**Item** **Page**

# NATIONAL QUALITY PROGRAM STANDARDS FOR SECONDARY (GRADES 9-12) AGRICULTURAL EDUCATION

### Standard 1: Program Design and Instruction

**Standard Statement – Curriculum & Program Design:** A Standards-based curriculum in Agriculture, Food & Natural Resources Systems is delivered through an integrated model that incorporates classroom and laboratory instruction, experiential learning and student leadership & personal development.

**Standard Statement - Instruction:** Programs promote academic achievement and skill development of all students through year-round instruction.

**Standard Statement - Facilities & Equipment:** The facilities and equipment support implementation of the program and curriculum by providing all students opportunities for the development and application of knowledge and skills.

**Standard Statement – Assessment:** Programs utilize multiple methods to assess student learning that illustrates academic achievement and skill development.

### Standard 2: Experiential Learning

**Standard Statement:** Education is enhanced through active participation by all students in a year-round experiential learning program.

### Standard 3: Leadership Development

**Standard Statement:** All students participate in year-round intra-curricular agricultural student organization programs and activities.

### Standard 4: School and Community Partnerships

**Standard Statement:** School and community partners are engaged in developing and supporting a quality program.

### Standard 5: Marketing

**Standard Statement:** Key stakeholders are continually asked, involved, recognized and informed about all components of the integrated program.

### Standard 6: Certified Agriculture Teachers and Professional Growth

**Standard Statement:** Competent and technically certified agriculture teachers provide

the core of the program.

**Standard 7: Program Planning and Evaluation**

**Standard Statement:** A system of needs assessment and evaluation provides information necessary for continual program development and improvement.

## INTRODUCTION

Include a brief description of the agricultural education program, number of students served, enrollment, number of teachers and any unique information about the program.

## STRENGTHS

Summarize below the major strengths of the agricultural education program. Include outstanding accomplishments of students, teachers and the FFA Chapter.

**Standard 1: Program Design and Instruction**

**Standard Statement – Curriculum & Program Design:** A Standards-based curriculum in Agriculture, Food & Natural Resources Systems is delivered through an integrated model that incorporates classroom and laboratory instruction, experiential learning and student leadership & personal development.

| **Definitions** |
|---|
| May be found in the glossary of terms located near the back of the document. |

## Quality Indicators

1.

The curriculum includes: 1.) course names & descriptions; 2.) course objectives/ competencies; 3.) course sequences, 4.) course prerequisites and 5.) staffing assignments for all courses.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| The curriculum includes all 5 quality indicator components. | The curriculum includes 4 of the 5 quality indicator components. | The curriculum includes 3 of the 5 quality indicator components. | The curriculum includes 2 of the 5 quality indicator components. | The curriculum includes 1 of the 5 quality indicator components. | |
| Evidence, Comment & Suggestions: | | | | | |

2.

Program and curriculum design is based upon input from stakeholders.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Program and curriculum design is based upon input from stakeholders as evidenced through advisory committee minutes and program changes/modifications. | Program and curriculum design is based upon input from stakeholders as evidenced through advisory committee minutes. | Program and curriculum design is based upon input from stakeholders as evidenced through discussion with stakeholders. | Program and curriculum design is based upon input from stakeholders as evidenced through discussion with teacher. | Program and curriculum design shows no evidence of input from stakeholders. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 1: Program Design and Instruction**

**Standard Statement - Curriculum & Program Design** (continued)

3.

The curriculum is organized logically and sequentially from introductory to advanced levels.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| The curriculum is challenging, organized logically and sequentially from introductory to advanced levels. | The curriculum is organized logically and sequentially from introductory to advanced levels. | The curriculum is organized logically and sequentially. | The curriculum organized logically. | The curriculum is outdated and unorganized. | |
| Evidence, Comment & Suggestions: | | | | | |

4.

An approved course of study is current and based on business & industry validated technical content standards, and when applicable industry certification and/or licensing agency standards.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| A course of study is current, school board approved and based on business & industry validated technical content standards, and when applicable industry certification and/or licensing agency standards with evidence of certification provided. | A course of study is current, school board approved and based on business & industry validated technical content standards, and when applicable industry certification and/or licensing agency standards. | A course of study is current and school board approved. | A course of study exists for the program. | No course of study exists. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 1: Program Design and Instruction**

**Standard Statement - Curriculum & Program Design** (continued)

5.
The technical content is aligned with academic content standards.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| The technical content objectives/ competencies are aligned and cross-referenced with state and academic content standards. | The technical content objectives/ competencies are aligned but not cross-referenced with state and academic content standards. | The technical content objectives/ competencies are partially aligned with state and academic content standards. | The technical content objectives/ competencies are listed. | No technical content or academic content standards are listed. | |

| Evidence, Comment & Suggestions: |
|---|
| |

6.

The program provides and encourages access for all students.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| The program enrollment is representative of the total school population providing and encouraging access for all students including non-traditional and special populations as evidenced by enrollment, FFA membership, recruitment materials and facilities. | The program encourages access for all students including non-traditional and special populations as evidenced by enrollment, FFA membership, recruitment materials and facilities. | There is limited evidence showing the program encourages access for all students including non-traditional and special populations | The program enrollment is not reflective of the total school population. | There is no evidence showing the program encourages access for all students. | |
| Evidence, Comment & Suggestions: | | | | | |

## Standard 1: Program Design and Instruction

**Standard Statement - Curriculum & Program Design** (continued)

7.

The curriculum is articulated with post-secondary institutions.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| The curriculum is articulated with postsecondary institutions including curriculum alignment, instructional support, formal written articulation agreements, and post-secondary dual credit. | The curriculum is articulated with postsecondary institutions including curriculum alignment, instructional support, and formal written articulation agreements. | The curriculum is articulated with postsecondary institutions including curriculum alignment and instructional support. | The curriculum is articulated with postsecondary institutions including curriculum alignment. | The curriculum is not articulated with postsecondary institutions. | |
| Evidence, Comment & Suggestions: | | | | | |

8.

Experiential learning (SAE) and leadership & personal development (FFA) are integrated throughout the instructional program.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| All students evaluate and analyze their leadership & personal development (FFA) and experiential learning (SAE) experiences as an integral part of the instructional program as evidenced by student files. | All students' experiences in leadership & personal development (FFA) and experiential learning (SAE) are incorporated in the instructional program. | Content related to leadership & personal development (FFA) and experiential learning (SAE) is included in the instructional program. | Students are informed of leadership & personal development (FFA) and experiential learning (SAE) opportunities as part of the instructional program. | Leadership & personal development (FFA) and experiential learning (SAE) programs are not addressed in the curriculum | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard Statement - Curriculum & Program Design** (continued)

## SUMMARY

| **Quality Indicator Scores**<br>Exemplary – 4; Promising – 3; Improving – 2; Struggling – 1; & Non-Existent - 0 | **Score Summary** |
|---|---|
| 1. The curriculum includes course descriptions and sequences, including prerequisites and staffing assignments. | |
| 2. Program and curriculum design is based upon input from stakeholders. | |
| 3. The curriculum is organized logically and sequentially from introductory to advanced levels. | |
| 4. The technical content is aligned with academic content standards. | |
| 5. The program provides and encourages access for all students. | |
| 6. The curriculum is articulated with post-secondary institutions. | |
| 7. Experiential learning (SAE) and leadership & personal development (FFA) are integrated throughout the instructional program. | |
| 8. An approved course of study is current and based on business & industry validated technical content standards, and when applicable industry certification and/or licensing agency standards. | |
| **TOTAL** | |

| Score | | | | | |
|---|---|---|---|---|---|
| Range | 32 – 25 | 24 – 17 | 16 – 9 | 8 – 1 | 0 |
| | **EXEMPLARY** | **PROMISING** | **IMPROVING** | **STRUGGLING** | **NON-EXISTENT** |

**The score for Standard 1: Program Design and Instruction Standard Statement: Curriculum & Program Design must be 22 or above to meet this standard.**

MET _____

NOT MET _____

**Standard 1: Program Design and Instruction**

**Standard Statement - Instruction:** Programs promote academic achievement and skill development of all students through year-round instruction.

| **Definitions** |
|---|
| May be found in the glossary of terms located near the back of the document. |

**Quality Indicators:**

1.

Year-round instruction is balanced between classroom & laboratory instruction, experiential learning (SAE), and leadership & personal development (FFA).

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| A well-planned, balance exists between the classroom & laboratory instruction, experiential learning (SAE), and leadership & personal development (FFA). The balance is documented, and resulted from collaboration with stake holders and state requirements. | Evidence exists that an attempt has been made to balance the classroom & laboratory instruction, experiential learning (SAE), and leadership & personal development (FFA), utilizing input from state staff, local administrators, and a local advisory committee. The curriculum appears to be dominated by 1 or more of the 3 components. | While one component of the curriculum is clearly dominating the instruction, the instructor(s) has a plan for bringing the deficient areas into balance. The instructor(s) is relying on assistance from state staff, local administrators, advisory committees, and other resources and has documented this in writing. | One component of the classroom & laboratory instruction, experiential learning (SAE), and leadership & personal development areas obviously dominates the curriculum, while others are minimally addressed or ignored altogether. | No balance is visible between classroom & laboratory instruction, experiential learning (SAE) and leadership and personal development (FFA). | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 1: Program Design and Instruction**

**Standard Statement - Instruction:** (continued)

2.

Lesson plans are documented and based upon an approved course of study with clearly formulated written objectives and/or competencies.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| A written lesson plan, based upon an approved course of study, with clearly formulated written objectives and/or competencies is on file for each lesson taught in the program which appears on a teaching calendar. | A written lesson plan, based upon an approved course of study, with clearly formulated written objectives and/or competencies is on file for 75% or more of the lessons taught which appears on a teaching calendar. | A written lesson plan, based upon an approved course of study, with clearly formulated written objectives and/or competencies is on file for 50% or more of the lessons taught which appears on a teaching calendar. | A written lesson plan, based upon an approved course of study, with clearly formulated written objectives and/or competencies is on file for less than 50% of the lessons taught in the program. | Limited written lesson plans are available and no teaching calendar exists. | |
| Evidence, Comment & Suggestions: | | | | | |

3.

Year-round instructional activities provide for the mastery of technical skills and the development of higher-order thinking.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Program planning and evaluation documentation indicates that year-round instructional/ educational activities which provide for the mastery of technical skills & the development of higher-order thinking. | Program planning and evaluation documentation indicates that year-round instructional/ educational activities which provide for the mastery of technical skills. | Program planning and evaluation documentation indicates that less than year-round instructional/ educational activities which provide for the mastery of technical skills. | Program planning and evaluation documentation indicates that less than year-round instructional/ educational activities are provided. | No evidence of year-round instructional activities to provide for the mastery of technical skills and the development of higher-order thinking. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 1: Program Design and Instruction**

**Standard Statement - Instruction:** (continued)

4.
Instruction reinforces the application of relevant and rigorous academic content standards.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Planned instruction indicates that rigorous state and national academic content standards have been incorporated into the teaching methods selected, support materials selected, and content of texts utilized in the courses of study. | Planned instruction indicates that rigorous state and national academic content standards were consulted when deciding on the teaching methods selected, support materials selected, and content of texts utilized in the courses of study. | Planned instruction indicates that rigorous state and national academic content standards have been considered on a limited basis when selecting the teaching methods, support materials, and content of texts utilized in the courses of study. | Planned instruction shows signs of some academic rigor, but has no documented association to any state or national content standards. | No evidence exists that instruction reinforces the application of relevant and rigorous academic content standards. | |
| Evidence, Comment & Suggestions: | | | | | |

5.
Instructional methods address the learning styles of all students.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Teacher instructional methods support a variety of documented student learning styles. | Teacher instructional methods support a variety of student learning styles. | Teacher uses a variety of instructional methods. | Teacher uses a limited variety of instructional methods. | No evidence exists that instructional methods address the variety of student learning styles. | |
| Evidence, Comment & Suggestions: | | | | | |

## Standard 1: Program Design and Instruction

**Standard Statement - Instruction:** (continued)

6.

Authentic student experiences are integrated into instructional methods.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| All applicable lessons have authentic student experiences integrated into the instructional methods. | At least 75% or more of applicable lessons have authentic student experiences integrated into the instructional methods. | 50% or more of applicable lessons have authentic student experiences integrated into the instructional methods. | Less than 50% of applicable lessons have authentic student experiences integrated into the instructional methods. | No evidence exists that authentic student experiences are integrated into the instructional methods. | |
| Evidence, Comment & Suggestions: | | | | | |

7.

Classroom management practices maximize time on task and minimize disruptive behaviors.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Teacher utilizes a maximum of instructional time with all students engaged in learning with minimal interruption of instructional continuity. | Teacher utilizes a maximum of instructional time with most students engaged in learning with limited interruption of instructional continuity. | Teacher utilizes a maximum of instructional time with most students engaged in learning. | Teacher uses limited instructional time and students exhibit disruptive behaviors. | No evidence exist that classroom management practices are used to maximize time on task and minimize disruptive behaviors. | |
| Evidence, Comment & Suggestions: | | | | | |

## Standard 1: Program Design and Instruction

**Standard Statement - Instruction:** (continued)

8.
Instructional methods and resources are inclusive and non-biased.
*(This can be accomplished through a curriculum committee, review by a recognized expert, or other methods approved by the local administration, school board, and advisory committee.)*

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| All Instructional methods and resources have been certified as inclusive and non-biased. | All Instructional methods and resources have been reviewed and designated as inclusive and non-biased. | A plan has been developed to replace non-inclusive and biased resources. | Instructional methods and resources are being reviewed for lack of inclusiveness and possible bias. | No evidence exists that the instructional methods and resources are inclusive and non-biased. | |
| Evidence, Comment & Suggestions: | | | | | |

9.

The instructional program uses a variety of current instructional materials, equipment, techniques, technology and community based resources.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| The instructional program uses a variety of current instructional materials, equipment, techniques, up-to-date technology and community based resources. | The instructional program uses a variety of current instructional materials, equipment, techniques and up-to-date technology. | The instructional program uses a variety of instructional materials, equipment, techniques and technology with a written plan for upgrading. | The instructional program uses materials, equipment and techniques that are out-of-date. | No evidence exists that the instructional program uses a variety of current instructional materials, equipment, techniques, technology and community based resources. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 1: Program Design and Instruction**

**Standard Statement - Instruction** (continued)

## SUMMARY

| **Quality Indicator Scores**<br>Exemplary – 4; Promising – 3; Improving – 2; Struggling – 1; & Non-Existent - 0 | **Score Summary** |
|---|---|
| 1. Year-round instruction is balanced between classroom & laboratory instruction, experiential learning (SAE), and leadership & personal development (FFA). | |
| 2. Lesson plans are documented and based upon an approved course of study with clearly formulated written objectives and/or competencies. | |

| | |
|---|---|
| 3. Year-round instructional activities provide for the mastery of technical skills and the development of higher-order thinking. | |
| 4. Instruction reinforces the application of relevant and rigorous academic content standards. | |
| 5. Instructional methods address the learning styles of all students. | |
| 6. Authentic student experiences are integrated into instructional methods. | |
| 7. Classroom management practices maximize time on task and minimize disruptive behaviors. | |
| 8. Instructional methods and resources are inclusive and non-biased. | |
| 9. The instructional program uses a variety of current instructional materials, equipment, techniques, technology and community based resources. | |
| **TOTAL** | |

| Score | | | | | |
|---|---|---|---|---|---|
| Range | 36 – 28 | 27 – 19 | 18 – 10 | 9 – 1 | 0 |
| | **EXEMPLARY** | **PROMISING** | **IMPROVING** | **STRUGGLING** | **NON-EXISTENT** |

**The score for Standard 1: Program Design and Instruction Standard Statement: Instruction must be 25 or above to meet this standard.**

**MET** _____

**NOT MET** _____

Standard 1: **Program Design and Instruction**

**Standard Statement - Facilities & Equipment:** The facilities and equipment support implementation of the program and curriculum by providing all students opportunities for the development and application of knowledge and skills.

| **Definitions** |
|---|
| May be found in the glossary of terms located near the back of the document. |

## Quality Indicators

1.

Facility size, layout and labs provide for effective delivery of the program course of study and meet the needs of the students enrolled.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Size exceeds state standards, serves curricular needs of students and design accommodates emerging instructional needs. | Size meets state standards and design accommodates current instructional needs. | Size meets state standards and instructor(s) significantly adjusts design to accommodate current instructional needs. | Size does not meet state standards and design is not conducive to instructional activities. | No permanent facility exists. | |
| Evidence, Comment & Suggestions: | | | | | |

2.

Facility meets existing local, state, and/or federal safety standards.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Exceeds safety standards. | Meets required safety standards. | Plan for improvements in place and improvements being made. | No plan to address needed safety needs but improvements underway. | Does not meet safety standards | |

| Evidence, Comment & Suggestions: |
|---|
| |

**Standard 1: Program Design and Instruction**

**Standard Statement - Facilities & Equipment:** (continued)

3.

Facility meets existing local, state, and/or federal health standards including air, temperature, water, acoustics, ventilation, light and particulate control.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Environmental controls exceed standards and may accommodate future upgrading. | Environmental controls are operational and meet present needs. | Plan for improvements is in place and improvements being made. | Environmental controls work poorly and no plan is in place for improvement. | Multiple environmental standards do not meet health standards | |
| Evidence, Comment & Suggestions: | | | | | |

4.

Facility is clean, organized, and maintained to provide an environment conducive to learning.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Facility is clean and well maintained, with instructional materials logically organized. | Facility is clean, maintained and organized. | Facility is clean and organized but needs to be maintained. | Facility Is clean but needs organization and maintenance. | Facility is unclean, poorly organized with significant maintenance required | |

| Evidence, Comment & Suggestions: |
|---|
| |

**Standard 1: Program Design and Instruction**

**Standard Statement - Facilities & Equipment:** (continued)

5.
Facility is free of barriers that would result in the denial of access due to gender or handicap.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Is 100% accommodating to students. | Is accessible and accommodating, needs minor improvements to achieve 100% access. | Barriers evident, and a board approved plan is in place for eliminating accessibility problems. | Barriers are evident, accessibility plan is being developed. | Barriers are present with no plan to change. | |
| Evidence, Comment & Suggestions: | | | | | |

6.
Storage space is functional and sufficient for student and instructional materials, supplies, and equipment.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Exceeds state standards for size and is well organized. | Meets state standards for size and organized. | Inadequate space and organized or adequate space and unorganized. | Inadequate space and unorganized. | No storage space. | |

| Evidence, Comment & Suggestions: |
|---|
| |

**Standard 1: Program Design and Instruction**

**Standard Statement - Facilities & Equipment:** (continued)

7.
An equipment and technology inventory is completed annually and is developed with a plan for new purchases and replacements.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Equipment and technology inventory is recorded/revised annually, reviewed by advisory committee and a 5 year plan for equipment and technology purchases and replacement is in place. | Equipment and technology inventory is recorded/revised annually with an organized plan for annual purchase and replacement. | An equipment and technology inventory is completed with an organized plan for new purchases and replacement under development. | An inventory is recorded, but incomplete | No inventory of equipment or technology exists. | |
| Evidence, Comment & Suggestions: | | | | | |

8.
Classroom and laboratory equipment is maintained; adequate consumable supplies are provided annually and are current to industry standards.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Classroom and laboratory equipment is well maintained; current to industry standards and adequate consumable supplies are provided. | Classroom and laboratory equipment is maintained; and adequate consumable supplies are provided. | Classroom and laboratory equipment needs maintenance or upgrading and adequate consumable supplies are provided. | Classroom and laboratory equipment needs upgrading and sufficient consumable supplies are not provided. | Classroom and laboratory equipment is outdated or inadequate and consumable supplies are not provided. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 1: Program Design and Instruction**

**Standard Statement - Facilities & Equipment:** (continued)

9.
Safety inspection has been conducted on all tools and equipment with all defective items removed, repaired, or replaced.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| A documented safety inspection has been conducted on all tools and equipment with all defective items removed, repaired, or replaced. | A safety inspection has been conducted on all tools and equipment with all defective items removed, repaired, or replaced. | Safety inspections are conducted infrequently with defective items removed, repaired, or replaced. | Safety inspections are infrequent and defective items are present and accessible. | No safety inspection has been conducted and defective items are present and accessible. Tools and equipment should not be used until corrective measures are completed. | |
| Evidence, Comment & Suggestions: | | | | | |

10.

The inventory of tools and equipment is based on the largest number of students using the facility in a given class period.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Safe, adequate tools and equipment meets the needs of all classes. | Tools and equipment meet the needs of all classes or instructional strategies accommodate all students with positive results. | Tools and equipment needs have been budgeted to meet the needs of all classes or instructional strategies accommodate all students with positive results. | Tools and equipment needs have not been met for all classes nor have instructional strategies been put in place to accommodate all students. | Tools and equipment are insufficient to meet the instructional needs. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 1: Program Design and Instruction**

**Standard Statement - Facilities & Equipment:** (continued)

11.

Current technology is available to deliver instruction and manage the program.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| State of the art technology is inventoried and present in the agricultural program and is incorporated into agricultural | Technology is inventoried and present in the agricultural program and is incorporated into agricultural classroom | Technology is available to the agricultural program and is incorporated into agricultural classroom instruction. | Technology is available to the agricultural program and is not utilized in agricultural classroom instruction. | Technology is not available. | |

| | | | | | |
|---|---|---|---|---|---|
| classroom instruction. | instruction. | | | | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 1: Program Design and Instruction**
**Standard Statement - Facilities & Equipment:** (continued)

## SUMMARY

| **Quality Indicator Scores**<br>Exemplary – 4; Promising – 3; Improving – 2; Struggling – 1; & Non-Existent - 0 | **Score Summary** |
|---|---|
| 1. Facility size, layout and labs provide for effective delivery of the program course of study and meet the needs of the students enrolled. | |
| 2. Facility meets existing local, state, and/or federal safety standards. | |
| 3. Facility meets existing local, state, and/or federal health standards including air, temperature, water, acoustics, ventilation, light and particulate control. | |
| 4. Facility is clean, organized, and maintained to provide an environment conducive to learning. | |
| 5. Facility is free of barriers that would result in the denial of access due to gender or handicap. | |
| 6. Storage space is functional and sufficient for | |

| | |
|---|---|
| student and instructional materials, supplies, and equipment. | |
| 7. An equipment and technology inventory is completed annually and is developed with a plan for new purchases and replacements. | |
| 8. Classroom and laboratory equipment is maintained; adequate consumable supplies are provided annually and are current to industry standards. | |
| 9. Safety inspection has been conducted on all tools and equipment with all defective items removed, repaired, or replaced. | |
| 10. The inventory of tools and equipment is based on the largest number of students using the facility in a given class period. | |
| 11. Current technology is available to deliver instruction and manage the program. | |
| **TOTAL** | |

| Score | | | | | |
|---|---|---|---|---|---|
| Range | 44 – 34 | 33 – 23 | 22 – 12 | 11 - 1 | 0 |
| | **EXEMPLARY** | **PROMISING** | **IMPROVING** | **STRUGGLING** | **NON-EXISTENT** |

**The score for Standard 1: Program Design and Instruction Standard Statement: Facilities and Equipment must be 31 or above to meet this standard.**

MET _____

NOT MET _____

Standard 1: **Program Design and Instruction**

**Standard Statement – Assessment:** Programs utilize multiple methods to assess student learning that illustrates academic achievement and skill

development.

*(Assessment involves evaluation of classroom instruction including technical and academic competencies, experiential learning (SAE) and FFA participation.)*

| **Definitions** |
|---|
| May be found in the glossary of terms located near the back of the document. |

## Quality Indicators

1.
Students demonstrate technical/academic performance through assessments based upon identified competencies, cross-referenced with state & national standards.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Program has on file, technical /academic assessments based on identified competencies, cross-referenced with state and national standards. | Program has assessments based on technical or academic competencies with state standards. | Program has assessments that are based on state technical or academic competencies. | Program has assessments that are not based on identified competencies. | No evidence that performance through assessments exist or that competencies have been identified. | |
| Evidence, Comment & Suggestions: | | | | | |

### Standard 1: Program Design and Instruction

**Standard Statement – Assessment:** (continued)

2.
Students demonstrate their performance of technical competencies through authentic assessments.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Students demonstrate their performance of technical competencies through statewide authentic assessments with identified mastery levels. | Students demonstrate their performance of technical competencies through local authentic assessments with identified mastery levels. | Students demonstrate their performance of technical competencies through local authentic assessments. | Students demonstrate their performance through local assessments. | No evidence exists of authentic student assessment. | |
| Evidence, Comment & Suggestions: | | | | | |

3.

Student's experiential learning program (SAE) is evaluated to measure knowledge and skill level.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Student experiential learning programs are evaluated to measure knowledge and skill level for each grading period (including summer) as a part of the class grade. Record keeping is linked with instructional objectives. | Student experiential learning programs are evaluated each grading period (including summer) as a part of the class grade. | Student experiential learning programs are reviewed to assure they are up-to-date and complete. | Student experiential learning programs are not assessed. | Student experiential learning program does not exist. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 1: Program Design and Instruction**

**Standard Statement – Assessment:** (continued)

4.

Students develop a file and/or portfolio that document their agricultural education experience programs.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Students develop a file and/or portfolio that document their agricultural education experience programs with all completers possessing an employer-ready portfolio that has been evaluated by the teacher. | Students develop a file and/or portfolio that document their agricultural education experience programs that have been evaluated by the teacher. | Students develop a file and/or portfolio that document their agricultural education experience programs. | Limited documentation exists related to students' agricultural education experience programs. | No documentation of student agricultural education program exists. | |
| Evidence, Comment & Suggestions: | | | | | |

5.

Program has in place a grading procedure that incorporates all components of the instructional program (i.e. classroom/lab, experiential learning (SAE) and leadership and personal development (FFA).

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATO SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| An approved grading plan is utilized that meets local guidelines and evaluates the three components of the instructional program and is shared with student, parents and employers. | An approved grading plan is utilized that meets local guidelines and evaluates the three components of the instructional program. | An approved grading plan is utilized that meets local guidelines and evaluates classroom/laboratory instruction and one other component of the instructional program. | An approved grading plan is utilized that meets local guidelines and evaluates classroom/laboratory instruction. | An approved grading plan is not in place. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 1: Program Design and Instruction**

**Standard Statement – Assessment:** (continued)

## SUMMARY

| **Quality Indicator Scores**<br>Exemplary – 4; Promising – 3; Improving – 2; Struggling – 1; & Non-Existent - 0 | **Score Summary** |
|---|---|
| 1. Students demonstrate technical/academic performance through assessments based upon identified competencies, cross-referenced with state & national standards. | |
| 2. Students demonstrate their performance of technical competencies through authentic assessments. | |
| 3. Student's experiential learning program (SAE) is evaluated to measure knowledge and skill level. | |
| 4. Students develop a file and/or portfolio that document their agricultural education experience programs. | |

| | |
|---|---|
| 5. Program has in place a grading procedure that incorporates all components of the instructional program (i.e. classroom/lab, experiential learning (SAE) and leadership and personal development (FFA). | |
| **TOTAL** | |

| Score | | | | | |
|---|---|---|---|---|---|
| Range | 20 – 16 | 15 – 11 | 10 – 6 | 5 – 1 | 0 |
| | **EXEMPLARY** | **PROMISING** | **IMPROVING** | **STRUGGLING** | **NON-EXISTENT** |

**The score for Standard 1: Program Design and Instruction Standard Statement: Facilities and Equipment must be 14 or above to meet this standard.**

MET _____

NOT MET _____

**Standard 2: Experiential Learning**

**Standard Statement:** Education is enhanced through active participation by all students in a year-round experiential learning program.

| **Definitions** |
|---|
| May be found in the glossary of terms located near the back of the document. |

## Quality Indicators

1.

All students have experiential learning (SAE) programs based on career pathways/clusters/ interests and agricultural curriculum standards.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| All students enrolled in the program have an approved experiential learning (SAE) program, documented by a continuous record keeping system. | 75% or greater of the students enrolled in the program have an approved experiential learning (SAE) program, documented by a continuous record keeping system. | 50% or greater of the students enrolled in the program have an approved experiential learning (SAE) program, documented by a continuous record keeping system. | Less than 50% of the students enrolled in the program have an approved experiential learning (SAE) program, documented by a continuous record keeping system. | Students enrolled in the program do not have an approved experiential learning (SAE) program. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 2: Experiential Learning** (continued)

2.
Experiential learning (SAE) programs are planned, developed and managed by the student with instruction and support by the agriculture teacher, parents and/or employer.

| **EXEMPLARY 4** | **PROMISING 3** | **IMPROVING 2** | **STRUGGLING 1** | **NON-EXISTEN 0** |
|---|---|---|---|---|
| Each student has an experiential learning (SAE) program developed through a consultation between the student, agriculture instructor, parents/guardians, and the employer when applicable. | 75% or greater of students have an experiential learning (SAE) program developed through a consultation between the student, agriculture instructor, parents/guardians, and the employer when applicable. | 50% or greater of students have an experiential learning (SAE) program developed through a consultation between the student, agriculture instructor, parents/guardians, and the employer when applicable. | Less than 50% of students have an experiential learning (SAE) program developed through a consultation between the student, agriculture instructor, parents/guardians, and the employer when applicable. | 25% or less of students have a experiential learning (SAE program developed throu a consultation between the student, agriculture instructor, parents/guardia and the employ when applicabl |
| Evidence, Comment & Suggestions: | | | | |

3.

The agriculture teacher maintains accurate records of all experiential learning (SAE) supervision.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| A documented record of each experiential learning (SAE) supervision visit outside of regular class time with a minimum of 180 supervisory visits per teacher **OR** 4 per student per year per teacher. | A documented record of each experiential learning (SAE) supervision visit outside of regular class time with greater than 150 supervisory visits per teacher **OR** 3 per student per year per teacher. | A documented record of each experiential learning (SAE) supervision visit outside of regular class time with greater than 120 supervisory visits per teacher **OR** 2 per student per year per teacher. | A documented record of each experiential learning (SAE) supervision visit per teacher outside of regular class time. | No records of experiential learning (SAE) supervision are available. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 2: Experiential Learning** (continued)

4.

Continuous instruction and supervision of student experiential learning (SAE) programs are provided by the agriculture teacher throughout the calendar year.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| A 12 month calendar of instruction, including regularly scheduled supervisory visits of student experiential learning (SAE) is filed monthly with the school administration. | Regularly scheduled supervisory visits of student experiential learning (SAE) is filed monthly with the school administration and updated as needed throughout the year. | Scheduled supervisory visits of student experiential learning (SAE) are filed monthly with the school administration. | Supervisory visits of student experiential learning (SAE) are not documented. | Student experiential learning (SAE) is not a supported component of the instructional process. | |
| Evidence, Comment & Suggestions: | | | | | |

5.

Each agriculture student maintains up-to-date and accurate experiential learning (SAE) records.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Each student enrolled in the program maintains an up-to-date and accurate experiential learning (SAE) record, examined and approved monthly by the agriculture instructor. | 75% or greater of students enrolled in the program maintain an up-to-date and accurate experiential learning (SAE) record, examined and approved monthly by the agriculture instructor. | 50% or greater of students enrolled in the program maintain an up-to-date and accurate experiential learning (SAE) record, examined and approved monthly by the agriculture instructor. | Less than 50% of students enrolled in the program maintain an up-to-date and accurate experiential learning (SAE) record, examined and approved monthly by the agriculture instructor. | 25% or less of students enrolled in the program maintain an up-to-date and accurate experiential learning (SAE) record, examined and approved monthly by the agriculture instructor. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 2: Experiential Learning** (continued)

6.

An annual summary of students' experiential learning (SAE) programs is completed and submitted to appropriate entities.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| An annual summary of students' experiential learning (SAE) programs is completed and submitted to appropriate entities, including state department of agricultural education, local school board, administration, and is then maintained in the department's permanent records. | An annual summary of students' experiential learning (SAE) programs is completed and submitted to local school board, administration, and is then maintained in the department's permanent records. | An annual summary of students' experiential learning (SAE) programs is completed and submitted to local administrator and is then maintained in the department's permanent records. | An annual summary of students' experiential learning (SAE) programs is completed and maintained in the department's permanent records. | No summary of students' experiential learning (SAE) programs is completed. | |
| Evidence, Comment & Suggestions: | | | | | |

7.

Students have comprehensive experiential learning (SAE) programs that show evidence of growth in size and/or scope.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| All students enrolled in the program have comprehensive experiential learning (SAE) programs that show evidence of growth in size and/or scope | 75% or greater of students enrolled in the program have comprehensive experiential learning (SAE) programs that show evidence of growth in size and/or scope | 50% or greater of students enrolled in the program have comprehensive experiential learning (SAE) programs that show evidence of growth in size and/or scope | Less than 50% of students enrolled in the program have comprehensive experiential learning (SAE) programs that show evidence of growth in size and/or scope | Experiential learning (SAE's) are nonexistent. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 2: Experiential Learning** (continued)

## SUMMARY

| **Quality Indicator Scores**<br>Exemplary – 4; Promising – 3; Improving – 2; Struggling – 1; & Non-Existent - 0 | **Score Summary** |
|---|---|
| 1. All students have experiential learning (SAE) programs based on career pathways/clusters/interests and agricultural curriculum standards. | |
| 2. Experiential learning (SAE) programs are planned, developed and managed by the student with instruction and support by the agriculture teacher, parents and/or employer. | |
| 3. The agriculture teacher maintains accurate records of all experiential learning (SAE) supervision. | |
| 4. Continuous instruction and supervision of student experiential learning (SAE) programs are provided by the agriculture teacher throughout the calendar year. | |
| 5. Each agriculture student maintains up-to-date and accurate experiential learning (SAE) records. | |

| | |
|---|---|
| | |
| 6. An annual summary of students' experiential learning (SAE) programs is completed and submitted to appropriate entities. | |
| 7. Students have comprehensive experiential learning (SAE) programs that show evidence of growth in size and/or scope. | |
| **TOTAL** | |

| Score | | | | | |
|---|---|---|---|---|---|
| Range | 28 – 22 | 21 – 15 | 14 – 8 | 7 – 1 | 0 |
| | **EXEMPLARY** | **PROMISING** | **IMPROVING** | **STRUGGLING** | **NON-EXISTENT** |

**The score for Standard 2: Experiential Learning must be 20 or above to meet this standard.**

**MET** _____

**NOT MET**

_____

**Standard 3: Leadership Development**

**Standard Statement:** All students participate in year-round intra-curricular agricultural student organization programs and activities.

| **Definitions** |
|---|
| May be found in the glossary of terms located near the back of the document. |

**Quality Indicators**

1.
All students enrolled in the agricultural education program are members of the

FFA.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| 100% of students are FFA members. | At least 90% or greater of students are FFA members. | At least 85% or greater of the students are FFA members | Less than 80% of students are FFA members. | The agricultural education program does not have a chartered FFA chapter. | |
| Evidence, Comment & Suggestions: | | | | | |

2.
All students have a progressive plan for leadership and personal development.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| 100% of students have a progressive written plan for leadership and personal development documented. | 90% or greater of students have a progressive written plan for leadership and personal development documented. | 85% or greater of students have a progressive written plan for leadership and personal development in place. | A format is in place for students to develop a plan but less that 85% of students have documented plans in place. | No format is in place for students to develop a plan for leadership and personal development. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 3: Leadership Development** (continued)

3.
All students participate in FFA-related programs and activities.
*(Program Areas are defined as Career Development Events, Proficiency Awards, Service Learning Activities, Fundraising Activities, Leadership Conferences such as Washington Leadership Conference, Made For Excellence or EDGE, National*

*Chapter Award Committees, Leadership Conferences, Camps and Activities above the local level and/or holding a chapter office.)*

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| All students participate in an agricultural education program average of at least two program areas and at least four activities each year. | All students participate in an agricultural education program average of at least one program and at least three activities per year. | All students participate in at least two program areas and at least two activities each year. | All students participate in at least one program area and at least one activity each year. | No evidence of member participation in FFA program areas or activities. | |
| Evidence, Comment & Suggestions: | | | | | |

4.

All students participate in FFA leadership and personal development activities/events above the local level.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATO SCORE |
|---|---|---|---|---|---|
| All members participation in FFA leadership and personal development activities/events above the local level. | 75% or more members participate in FFA leadership and personal development activities/events above the local level. | 50% or more members participate in FFA leadership and personal development activities/events above the local level. | Less than 50% members participate in FFA leadership and personal development activities/events above the local level. | No evidence of member participation in FFA leadership and personal development activities/events above the local level. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 3: Leadership Development** (continued)

5.

The FFA chapter constitution and/or bylaws are up-to-date and reviewed

annually.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| The FFA chapter has an approved constitution and bylaws reviewed and updated annually, consistent with local school policies and distributed to each FFA member, school administrator and school board member. | The FFA chapter has an approved constitution and bylaws reviewed and updated annually, consistent with local school policies accessible to each FFA member, school administrator and school board member. | The FFA chapter has an approved constitution and bylaws reviewed and updated within the last 3 years, consistent with local school policies accessible to each FFA member, school administrator and school board member. | The FFA chapter has an approved constitution and bylaws that has been reviewed and updated within the past five years. | No evidence that the FFA chapter has an approved constitution and/or bylaws. | |
| Evidence, Comment & Suggestions: | | | | | |

6.

FFA members are involved in the planning and implementation of a Program of Activities (POA).

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| The annual program of activities is planned and implemented by chapter members, committees and committee chairs are assigned. Every member has access to the POA with school board and school administration having a copy. | The annual program of activities is planned and implemented annually by chapter members, committees and committee chairs are assigned and every member has access. | The annual program of activities is planned and implemented by chapter members and every member has access. | The annual program of activities is not planned and implemented by the members and/or is not complete. | No evidence that the FFA chapter has an annual program of activities. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 3: Leadership Development** (continued)

7.
The FFA chapter conducts well-planned regularly scheduled chapter meetings.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Regularly scheduled monthly meetings are conducted using a distributed agenda including reports, proper use of parliamentary procedure with minutes and reports kept on file. | Regularly scheduled monthly meetings are conducted using a distributed agenda and minutes. | Regularly scheduled monthly meetings are conducted without regular use of an agenda, reports and/or minutes. | Periodic meetings are being held without the use of an agenda or minutes. | No evidence chapter meetings are being held. | |
| Evidence, Comment & Suggestions: | | | | | |

8.

The FFA chapter plans and conducts award recognition programs.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Members and supporters are recognized using a student planned and conducted award recognition program. The function is attended by 95% or more of chapter members with parents, school staff/officials and community members attending. | Members and supporters are recognized using a chapter planned and conducted program. The function is attended by 75% or more of chapter members with parents, school staff/officials and community members attending. | Members and supporters are recognized using a chapter planned program. The function is attended by 50% or more of chapter members with parents, school staff/officials and community members attending. | Members are recognized during a school organized program not planned by the FFA chapter. | Members and supporters are not recognized using a formal program. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 3: Leadership Development** (continued)

9.

The FFA chapter has a current budget which provides the financial resources to support the Program of Activities (POA) and maintains accurate financial records.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Chapter has a budget with resources to support the POA. The chapter treasurer maintains financial records audited annually providing regular detailed chapter meeting reports. Chapter has sufficient financial funds to devote to savings. | Chapter has a budget with resources to support the POA. The chapter treasurer maintains financial records audited annually providing regular detailed chapter meeting reports. | Chapter has a budget with resources to support the POA. The chapter treasurer maintains financial records with regular chapter meeting reports. | Relies on the school to maintain accurate financial records. Financial resources are not sufficient to support the POA. | No evidence that the FFA chapter has financial resources to support the POA and maintains financial records. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 3: Leadership Development** (continued)

10.

Capable and trained officers lead the FFA chapter.

*(A chapter leadership continuum program is designed to develop the leadership skills of members to enhance their growth to assume future leadership positions.)*

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Chapter officers are elected annually by members using an approved process outlined in the chapter bylaws. Chapter officers are properly trained to fulfill the duties of their office and participate in leadership activities above the chapter level. | Chapter officers are elected annually by members using an approved process outlined in the chapter bylaws. Chapter officers are properly trained to fulfill the duties of their office and participate in leadership activities at the chapter level. | Chapter officers are elected annually by members using an approved process outlined in the chapter bylaws. Chapter officers are properly trained to fulfill the duties of their office. | No written process in place to elect chapter officers. No training processes in place to ensure chapter officers understand the duties of their office. | No chapter officers in place to lead the chapter. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 3: Leadership Development (continued)**

## SUMMARY

| **Quality Indicator Scores** Exemplary – 4; Promising – 3; Improving – 2; Struggling – 1; & Non-Existent - 0 | **Score Summary** |
|---|---|
| 1. All students enrolled in the agricultural education program are members of the FFA. | |
| 2. All students have a progressive plan for leadership and personal development. | |
| 3. All students participate in FFA-related programs and activities. | |

| | |
|---|---|
| 4. All students participate in FFA leadership and personal development activities/events above the local level. | |
| 5. The FFA chapter constitution and/or bylaws are up-to-date and reviewed annually. | |
| 6. FFA members are involved in the planning and implementation of a Program of Activities (POA). | |
| 7. The FFA chapter conducts well-planned regularly scheduled chapter meetings. | |
| 8. The FFA chapter plans and conducts award recognition programs. | |
| 9. The FFA chapter has a current budget which provides the financial resources to support the POA and maintains accurate financial records. | |
| 10. Capable and trained officers lead the FFA chapter. | |
| **TOTAL** | |

| Score | | | | | |
|---|---|---|---|---|---|
| Range | 40 – 31 | 30 – 21 | 20 – 11 | 10 – 1 | 0 |
| | **EXEMPLARY** | **PROMISING** | **IMPROVING** | **STRUGGLING** | **NON-EXISTENT** |

**The score for Standard 3: Leadership Development must be 28 or above to meet this standard.**

**MET** _____

NOT MET _____

## Standard 4: School and Community Partnerships

**Standard Statement:** School and community partners are engaged in developing and supporting a quality program.

| **Definitions** |
|---|
| May be found in the glossary of terms located near the back of the document. |

### Quality Indicators

1.

School, FFA Alumni and community partners are familiar with the goals, objectives, prerequisites, activities, and accomplishments of the agricultural education program.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDI S( |
|---|---|---|---|---|---|
| Resources are developed or acquired to continually enhance awareness and increase the partner base for increased support for the program. Special well planned events are held to enhance the awareness of counselors and key decision makers of the opportunities for students to acquire academic rigor in a relevant setting. | Local advisory committee is in place, well informed and meeting on a regular basis. Program updates are disseminated to all key partners to keep them well informed of goals, objectives, activities, accomplishments, future plans and how partners can be involved. | Potential school and community partners in key areas of support are identified. Key partners are invited to annual functions where the accomplishments and activities of the program are highlighted. Local media is used to keep school and community partners up to date on program goals and the importance of agricultural education to the economy and educational value towards career opportunities and success. | Communicating primarily with school staff and administration. Very little interaction with key community leaders to inform them of program activities and accomplishments. | Limited interaction with school or community members on the benefits and/or accomplishments of the program. Information is only provided if requested. | |

| Evidence, Comment & Suggestions: |
|---|
| |

**Standard 4: School and Community Partnerships** (continued)

2.

School, FFA Alumni and community partners are recognized for their support of the program.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Outstanding school, FFA Alumni and community partners are nominated to be recognized at the area, state and national levels. | School, FFA Alumni and community partners are recognized on an annual basis during a special program, publications and/or special media attention. Program records of their recognition are maintained. | School, FFA Alumni and community partners are recognized on an annual basis during a special program. They are recognized through local and regional publications. | School, FFA Alumni and community partners are recognized by use of thank you or publications but no special recognition function is used. | School, FFA Alumni and community partners are not recognized in a formal setting. | |
| Evidence, Comment & Suggestions: | | | | | |

3.

Community volunteers (FFA Alumni) are organized and involved in supporting the agricultural education program.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Outstanding volunteers are recognized for their leadership and accomplish-ments. An organized campaign by existing volunteers is conducted to increase the capacity and support for the program by seeking new volunteers. | Volunteers are well informed, organized into committees and understand their role to support the program. Regular meetings and events are scheduled to accomplish goals. | Program volunteer group is in place working with the local teacher to identify needs and plans to support the program. | Community volunteers are identified and contacted only in high demand situations. | Community volunteers are not involved in the support of the local program. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 4: School and Community Partnerships** (continued)

4.

School, FFA Alumni and community partners, including parents and/or guardians, are regularly informed about student learning and program success.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Resources are developed or acquired to enhance additional awareness and support for the program. Well planned events are held to enhance the awareness of parents and key decision makers of the opportunities for students to acquire academic rigor in a relevant setting while preparing for post secondary education and career opportunities. | Program update is disseminated on a regular basis to all key partners and parents to keep them well informed of goals, objectives, activities, accomplish-ments, future plans and how they can be involved. Student continued agricultural education plan and goals is developed, documented and shared with counselors and parents. | Key school and community based partners and parents are invited to annual award functions where the accomplishments and activities of the program are highlighted. Regular supervisory visits with students and parents to highlight the successes, opportunities and future plans the program has to offer the student. | Communicating with school staff and administration takes place when requested. Interaction with parents is during parent/teacher conferences and in high need situations. | Regular communication with parents, school and community partners to inform them of the progress of the programs and students are nonexistent. | |
| Evidence, Comment & Suggestions: | | | | | |

Standard 4: School and Community Partnerships **(continued)**

5.

Each teacher participates in and provides leadership for community and industry activities.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Each teacher is serving in leadership roles in the school and community. The teacher is well respected through recognition for their service and commitment to education and community support. | Each teacher has assumed a leadership role in the school and community and is recognized leader and role model for students to follow. | Each teacher has connected with leadership of the school, community and industry and is attending activities on a regular basis. | Each teacher has identified how they could be involved and is currently attending events or activities. | Each teacher is not involved in community and industry activities. | |
| Evidence, Comment & Suggestions: | | | | | |

6.

School, FFA Alumni and community partners advocate for the agricultural education program.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Teacher and partners are working with local, state and national Team Ag Ed organizations to support advocacy efforts on a regular basis. | Special events are held to demonstrate the resources, identify effective use and solicit support. Advocacy volunteer group is organized, goals are set and accomplished. | Partners are reminded of their need for support, effectively use the resources and encouraged to make contact. During high reminder time contact has increases. | Partners have been made aware of the resources available to advocate for agricultural education. Contact with key adversaries is minimal. | School and community partners are not knowledgeable of program accomplish-ments. | |
| Evidence, Comment & Suggestions: | | | | | |

## SUMMARY

| **Quality Indicator Scores**<br>Exemplary – 4; Promising – 3; Improving – 2; Struggling – 1; & Non-Existent - 0 | **Score Summary** |
|---|---|
| 1. School, FFA Alumni and community partners are familiar with the goals, objectives, prerequisites, activities, and accomplishments of the agricultural education program. | |
| 2. School, FFA Alumni and community partners are recognized for their support of the program. | |
| 3. Community volunteers (FFA Alumni) are organized and involved in supporting the agricultural education program. | |
| 4. School, FFA Alumni and community partners, including parents and/or guardians, are regularly informed about student learning and program success. | |
| 5. Teacher participates in and provides leadership for community and industry activities. | |
| 6. School, FFA Alumni and community partners advocate for the agricultural education program. | |
| **TOTAL** | |

| Score | | | | | |
|---|---|---|---|---|---|
| Range | 24 – 19 | 18 – 13 | 12 – 7 | 6 – 1 | 0 |
| | **EXEMPLARY** | **PROMISING** | **IMPROVING** | **STRUGGLING** | **NON-EXISTENT** |

**The score for Standard 4: School and Community Partnerships must be 17 or above to meet this standard.**

MET _____

NOT MET _____

## Standard 5: Marketing

**Standard Statement:** Key stakeholders are continually asked, involved, recognized and informed about all components of the integrated program.

| **Definitions** |
| --- |
| May be found in the glossary of terms located near the back of the document. |

### Quality Indicators

1.

Stakeholders including, school administrators, board members, FFA Alumni, counselors, parents and staff are familiar with the goals, objectives, prerequisites, activities, and accomplishments of the agricultural education program.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICA SCO |
| --- | --- | --- | --- | --- | --- |
| Stakeholders including, school administrators, board members, FFA Alumni, counselors, parents and staff are familiar with the goals, objectives, prerequisites, activities, and accomplishments of the agricultural education program. | Communication records shows stakeholders including, school administrators, board members, FFA Alumni, counselors, parents and staff are informed of the goals, objectives, prerequisites, activities, and accomplishments of the agricultural education program. | Communication shows that stakeholders are familiar with the accomplishments of the agricultural education program. Instructor participates in industry and community organizations. | Program activities are communicated regularly through the local media. | Communication is limited within the school and occasional community contacts. | |

| Evidence, Comment & Suggestions: |
|---|
| |

**Standard 5: Marketing** (continued)

2.
A positive school and community relations program is planned and conducted annually.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICA SCOF |
|---|---|---|---|---|---|
| A written marketing plan is developed and is followed annually to increase communications with the school and community with evidence of success. | A written marketing plan is developed and is followed annually to increase communications with the school and community. | A marketing plan is developed to increase communications with the school and community. | Information is provided to the school and community upon request | No evidence of communication related to program accomplishments. | |
| Evidence, Comment & Suggestions: | | | | | |

3.
A communication plan for key stakeholders is developed, implemented, reviewed and completed annually.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| A communication plan for key stakeholders is developed, implemented, reviewed and completed annually with evidence provided. | A communication plan for key stakeholders is developed, implemented, reviewed and completed annually. | A communication plan for key stakeholders exists. | Communication with key stakeholders casual in nature. | No communication with key stakeholders exists. | |

| Evidence, Comment & Suggestions: |
|---|
| |

**Standard 5: Marketing** (continued)

4.
A recruitment and retention plan is annually developed and implemented for prospective and current students.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| A recruitment and retention plan is annually developed and implemented for prospective and current students with evidence provided. | A recruitment and retention plan is annually developed and implemented for prospective and current students. | A recruitment and retention plan has been developed and implemented for prospective and current students. | A recruitment and retention plan is out dated or not implemented for prospective and current students. | No recruitment and retention plan for prospective and current students exists. | |
| Evidence, Comment & Suggestions: | | | | | |

5.
The teacher collects and reports relevant agricultural education program data/information to key stakeholders and other entities.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICAT SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| The teacher collects and reports relevant agricultural education program data/information to key stakeholders and other entities with evidence provided. | The teacher collects and reports relevant agricultural education program data/information to key stakeholders and other entities. | The teacher shares agricultural education program data/information to key stakeholders and other entities. | The agricultural education program data/information available to key stakeholders. | The teacher does not share relevant agricultural education program data/information to key stakeholders. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 5: Marketing** (continued)

6.
Relationships are built with local, state and national decision makers, including elected officials, through education and outreach.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Relationships are built with local, state and national decision makers, including elected officials, through education and outreach with evidence provided. | Relationships are built with local, state and national decision makers, including elected officials, through education and outreach. | Relationships are built with local decision makers, including elected officials, through education and outreach. | Relationships exist with local decision makers. | No evidence of relationships with local decision makers exists. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 5: Marketing (continued)**

## SUMMARY

| **Quality Indicator Scores**<br>Exemplary – 4; Promising – 3; Improving – 2; Struggling – 1; & Non-Existent - 0 | **Score Summary** |
|---|---|
| 1. Stakeholders including, school administrators, board members, FFA Alumni, counselors, parents and staff are familiar with the goals, objectives, prerequisites, activities, and accomplishments of the agricultural education program. | |
| 2. A positive school and community relations program is planned and conducted annually. | |
| 3. A communication plan for key stakeholders is developed, implemented, reviewed and completed annually. | |
| 4. A recruitment and retention plan is annually developed and implemented for prospective and current students. | |
| 5. The teacher collects and reports relevant agricultural education program data/information to key stakeholders and other entities. | |
| 6. Relationships are built with local, state and national decision makers, including elected officials, through education and outreach. | |
| **TOTAL** | |

| Score | | | | | |
|---|---|---|---|---|---|
| Range | 24 – 19 | 18 – 13 | 12 – 7 | 6 – 1 | 0 |
| | **EXEMPLARY** | **PROMISING** | **IMPROVING** | **STRUGGLING** | **NON-EXISTENT** |

**The score for Standard 5: Marketing must be 17 or above to meet this standard.**

MET _____

NOT MET _____

## Standard 6: Certified Agriculture Teachers and Professional Growth

**Standard Statement:** Competent and technically certified agriculture teachers provide the core of the program.

| **Definitions** |
|---|
| May be found in the glossary of terms located near the back of the document. |

### Quality Indicators

1.
Each teacher is state certified to teach agriculture.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Teacher(s) has an advanced degree in agricultural education from an accredited college or university and is certified above the basic state level. | Teacher(s) has a bachelor's degree and is certified within the state to teach agricultural education. | Teacher(s) holds a degree an accredited college or university and is provisionally state certified in agricultural education with a written professional development plan in place for full certification. | Teacher(s) is a lateral entry teacher in agricultural education with provisional or temporary state certification in agricultural education. | Teacher(s) does not hold a certificate for teaching agricultural education. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 6: Certified Agriculture Teachers and Professional Growth**
(continued)

2.
The agriculture teacher(s) is/are employed year-round to supervise student instruction and manage the agricultural education program.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| The agriculture teacher is employed 12 months, year round with adequate funds for supervision and management of the program. | The agriculture teacher is employed more than 11 months of the year with adequate funds for supervision and management of the program. | The agriculture teacher is employed with extended employment beyond the regular school operating months with employment less than 11 months of the year. | The agriculture teacher is employed only during the regular school operating months. | The agriculture teacher is only a substitute or part-time teacher. | |
| Evidence, Comment & Suggestions: | | | | | |

3.
The FFA advisor(s) is a/are certified agriculture teacher(s).

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| FFA advisor(s) is/are a fully state certified agriculture teacher. | | | | FFA advisor(s) is/are not on the staff. | |
| Evidence, Comment & Suggestions: | | | | | |

## Standard 6: Certified Agriculture Teachers and Professional Growth
(continued)

4.
All agriculture teachers in the secondary agricultural education program serve as FFA advisors.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| All teachers in an agricultural education program work cooperatively and serve as FFA advisor(s) with specific duties. | | | Only one teacher, in a multi-teacher agricultural education program serves as the FFA advisor. | No agricultural education teacher serves as FFA advisor(s). | |
| Evidence, Comment & Suggestions: | | | | | |

5.
All agriculture teachers have a professional growth plan.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Teacher has a written professional growth plan that is approved/ signed by the school administration, kept on file and reviewed periodically during the year with the administration. | Teacher has a written professional growth plan that is approved/ signed by the school administration, kept on file. | Teacher has a written professional growth plan on file. | Teacher does not have a formal professional growth plan. | No evidence of a teacher's professional growth plan. | |

| Evidence, Comment & Suggestions: |
|---|
| |

## Standard 6: Certified Agriculture Teachers and Professional Growth
(continued)

6.
Teacher has continued professional growth through college credit courses, participation in professional development and/or other sources of training.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Teacher holds an advanced degree, actively participates in workshops and other sources of technical training and is working towards National Board Teacher credentials, NBPT. | Teacher is working toward an advanced degree or has received an advanced degree and actively participates in workshops and other sources of professional and technical training. | Teacher actively participates in professional workshops or classes related to teaching area. | Teacher participates randomly in professional workshops with no evidence of regular or focused professional growth activities. | No evidence in participation in structured professional growth and development activities. | |
| Evidence, Comment & Suggestions: | | | | | |

7.
Teacher is an active member in related state and national professional education associations.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Member of and holds leadership position in professional organizations at and/or above state level. | Member of professional organizations and participates in functions at and /or above state level. | Member of and participates in annual the state professional organizations functions. | Non-member of the professional organizations, but participates in some professional function(s). | No member or active participation. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 6: Certified Agriculture Teachers and Professional Growth**
(continued)

8.
Teacher cooperates in fostering the professional development of pre-service and beginning teachers.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Teacher serves as an early experience model for those considering the teaching profession, serves as a mentor for beginning teachers and meets the criteria to serve as cooperating site for student teaching. | Provides an early experience model for those considering the teaching profession or participates in mentoring activities for new/returning teachers of agriculture. | Teacher is available to new teachers as a mentor or for mentoring activities. | Teacher has attended workshops or training on mentoring. | No evidence of assisting to new or returning teachers or participation in pre-service training. | |
| Evidence, Comment & Suggestions: | | | | | |

9.

Teachers exhibit a positive professional attitude and promote the profession as a career opportunity.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Teacher(s) is an advocate and spokesperson for a career in teaching agricultural education. Teacher(s) have former students who have become teachers. | Teacher(s) is an advocate at state levels with elected and government officials with impact agricultural education as a profession and a career. | Instructor(s) is a spokesperson for issues in the community which impact agricultural education. | Evidence of contact with community and local leaders. | No evidence of the promotion of the profession as a career opportunity. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 6: Certified Agriculture Teachers and Professional Growth**
(continued)

10.
Teacher contributes to the technical and pedagogical knowledge base of the profession.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Within the last 3 years the teacher has, organized and presented a professional organization workshop, or authored a submission to a refereed professional publication, taken leadership role in updating or adding innovative resources to curriculum and/or conducted formal research. | Within the last 5 years the teacher has organized and presented a professional organization workshop, or authored a submission to a refereed professional publication and/or taken leadership role in updating or adding innovative resources to curriculum. | Within the last 5 years the teacher has organized and presented a professional organization workshop or taken leadership role in updating or adding innovative resources to curriculum. | Teacher has attended a limited number of technical/knowledge meetings, with no evidence of presentations or authoring responsibilities. | No participation in any effort that contributes knowledge to the profession. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 6: Certified Agriculture Teachers and Professional Growth**
(continued)

## SUMMARY

| **Quality Indicator Scores**<br>Exemplary – 4; Promising – 3; Improving – 2; Struggling – 1; & Non-Existent - 0 | **Score Summary** |
|---|---|
| 1. Each teacher is state certified to teach agricultural education. | |
| 2. The agriculture teacher(s) is/are employed year-round to supervise student instruction and manage the agricultural education program. | |
| 3. The FFA advisor(s) is a/are certified agriculture | |

| | |
|---|---|
| teacher(s). | |
| 4. All agriculture teachers in the secondary agricultural education program serve as FFA advisors. | |
| 5. All agriculture teachers have a professional growth plan. | |
| 6. Teacher has continued professional growth through college credit courses, participation in professional development and/or other sources of training. | |
| 7. Teacher is an active member in related state and national professional education associations. | |
| 8. Teacher cooperates in fostering the professional development of pre-service and beginning teachers. | |
| 9. Teachers exhibit a positive professional attitude and promote the profession as a career opportunity. | |
| 10. Teacher contributes to the technical and pedagogical knowledge base of the profession. | |
| **TOTAL** | |

| Score | | | | | |
|---|---|---|---|---|---|
| Range | 40 – 31 | 30 – 21 | 20 – 11 | 10 – 1 | 0 |
| | **EXEMPLARY** | **PROMISING** | **IMPROVING** | **STRUGGLING** | **NON-EXISTENT** |

**The score for Standard 6: Certified Agriculture Teachers and Professional Growth must be 30 or above to meet this standard.**

**MET** _____

**NOT MET** _____

## Standard 7: Program Planning and Evaluation

**Standard Statement:** A system of needs assessment and evaluation provides information necessary for continual program development and improvement.

| **Definitions** |
|---|
| May be found in the glossary of terms located near the back of the document. |

## Quality Indicators

1.

Information on local, state and national performance measures are collected for program improvement and enhanced student learning.

*(Recommended local performance data elements that can be collected for use in program improvement includes (1) Student performance on local assessments, (2) Student demographics (gender, race, Perkins), (3) Student enrollment, and (4) Student retention.)*

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| All recommended performance data elements have been compiled. Three-year trend data has been complied. | All recommended performance data elements have been compiled. Significant effort to compile trend data is being made. | Some but not all performance data measures has been compiled. Little to no trend data exists. | Some data records exist but little effort made to compile into useable form. | No performance data collected. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 7: Program Planning and Evaluation** (continued)

2.

Information is collected from community partners relative to their expectations and current assessment of program quality and the success of students.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Information is collected and compiled on an annual basis from all community stakeholder groups. | Information is collected from most community stakeholder groups and is compiled at least every three years. | Information is collected but little effort made to compile into useable form. | The collection of pertinent data is in process. | No information is collected. | |

| Evidence, Comment & Suggestions: |
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| |

3.

A formal annual program evaluation based on local performance information, state performance measures, and input from community stakeholder groups is conducted.

*(Performance data relative to state and federal performance measures include (1) Testing of technical knowledge and skills, (2) Follow-up Placement, (3) Graduation rate, and (4) Attendance.)*

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDIC SC |
|---|---|---|---|---|---|
| A program evaluation is developed with significant stakeholder involvement. Based on evaluation recommendations, a continuous improvement plan has been developed. | A program evaluation, using all recommended performance data, is conducted every three years with involvement of community stakeholders. Evidence of program improvement based on recommendations. | An analysis of data and observations are conducted on an irregular basis with observations and recommendations recorded. Little evidence of use for program improvement. | An analysis is conducted with informal observations and recommendations made. | No program evaluation is conducted. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 7: Program Planning and Evaluation** (continued)

4.

The program uses an advisory committee, authorized by the local board of education, with established criteria for membership.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|

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|---|---|---|---|---|---|
| The program uses a highly structured advisory committee authorized by the School Board that consists of business, postsecondary and other representatives that are influential community members. | The program uses a School Board authorized advisory committee with defined membership and operational structure. | The program uses a School Board authorized advisory committee but lacks protocol and a defined membership. | Advisory committee exists but lacks School Board authorization and membership criteria. | No evidence of functioning advisory committee | |
| Evidence, Comment & Suggestions: | | | | | |

5.

The agriculture program advisory committee is reflective of the agricultural populations and local community.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Advisory committee members are active. Membership is reflective of current and emerging local and state industry. Membership is balanced between industry representatives and educators. | Advisory committee membership reflects current local and state industry as well as a balance between industry and educators. | Advisory committee reflects industry and education representation. | Imbalance of industry and educators on committee. | No advisory committee exists or is inactive. | |
| Evidence, Comment & Suggestions: | | | | | |

6.

The advisory committee meets regularly and maintains minutes of each meeting.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Advisory committee meets regularly (at least twice a year), records and maintains minutes of the meetings and reports to Board of Education. Meetings used for program evaluation, planning and growth. | The advisory committee meets regularly and maintains minutes of the meetings. | The advisory committee meets annually, and records discussion on general program operations. | Advisory committee meets to discuss special topics. Does not hold regular meetings or keep minutes of the meetings. | No advisory committee exists OR is inactive. | |
| Evidence, Comment & Suggestions: | | | | | |

7.

Advisory committee assists with all aspects of program operations including an evaluation, promotion, planning, instruction, and assessment of student learning.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Advisory committee assists with all aspects of the program including an evaluation, promotion, planning, instruction, and assessment of student learning. | The advisory committee meets regularly and reviews and provides feedback relative to most all program operations. | The advisory committee meets annually, and discusses general program operations. | Advisory committee exists, but no evidence of participation in program operations. | No advisory committee exists OR is inactive | |

| Evidence, Comment & Suggestions: |
|---|
| |

**Standard 7: Program Planning and Evaluation** (continued)

8.
Follow-up data is collected and maintained on all agriculture program graduates.

| EXEMPLARY 4 | PROMISING 3 | IMPROVING 2 | STRUGGLING 1 | NON-EXISTENT 0 | INDICATOR SCORE |
|---|---|---|---|---|---|
| Graduate data is collected regularly, maintained and used for program growth and development. | Data is collected and accessible. | Data is collected inconsistently. | Some information is available on graduates. | No follow up data is collected. | |
| Evidence, Comment & Suggestions: | | | | | |

**Standard 7: Program Planning and Evaluation (continued)**

## SUMMARY

| **Quality Indicator Scores** Exemplary – 4; Promising – 3; Improving – 2; Struggling – 1; & Non-Existent - 0 | **Score Summary** |
|---|---|
| 1. Information on local, state and national performance measures are collected for program improvement and enhanced student learning. | |
| 2. Information is collected from community partners relative to their expectations and current assessment of program quality and the success of students. | |

| | |
|---|---|
| 3. A formal annual program evaluation based on local performance information, state performance measures, and input from community stakeholder groups is conducted. | |
| 4. The program uses an advisory committee, authorized by the local board of education, with established criteria for membership. | |
| 5. The agriculture program advisory committee is reflective of the agricultural populations and local community. | |
| 6. The advisory committee meets regularly and maintains minutes of each meeting. | |
| 7. Advisory committee assists with all aspects of program operations including an evaluation, promotion, planning, instruction, and assessment of student learning. | |
| 8. Follow-up data is collected and maintained on all agriculture program graduates. | |
| **TOTAL** | |

| Score | | | | | |
|---|---|---|---|---|---|
| Range | 32 – 25 | 24 – 17 | 16 – 9 | 8 – 1 | 0 |
| | **EXEMPLARY** | **PROMISING** | **IMPROVING** | **STRUGGLING** | **NON-EXISTENT** |

**The score for the Standard 7: Program Planning and Evaluation must be 22 or above to meet this standard.**

**MET** _____

NOT MET _____
SUMMARY

**Indicate below your score and place an "X" in the rating box .**

| STANDARD | MY SCORE | SCORE TO MEET STANDARD | EXEMPLARY | PROMISING | IMPROVING | STRUGGLING | NON-EXISTENT |
|---|---|---|---|---|---|---|---|
| 1. Curriculum Design and Instruction – **Curriculum & Program Design** | | 22 | 32 - 25 | 24 - 17 | 16 – 9 | 8 –1 | 0 |
| 1. Program Design and Instruction – **Instruction** | | 25 | 36 – 28 | 27 – 19 | 18 – 10 | 9 – 1 | 0 |
| 1. Program Design and Instruction – **Facilities & Equipment** | | 31 | 44 – 34 | 33 – 23 | 22 – 12 | 11 - 1 | 0 |
| 1. Program Design and Instruction – **Assessment** | | 14 | 20 – 16 | 15 – 11 | 10 – 6 | 5 – 1 | 0 |
| 2. Experiential Learning | | 20 | 28 – 22 | 21 – 15 | 14 – 8 | 7 – 1 | 0 |
| 3. Leadership Development | | 28 | 40 – 31 | 30 – 21 | 20 – 11 | 10 – 1 | 0 |
| 4. School and Community Partnerships | | 17 | 24 – 19 | 18 – 13 | 12 – 7 | 6 – 1 | 0 |
| 5. Marketing | | 17 | 24 – 19 | 18 – 13 | 12 – 7 | 6 – 1 | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6. Certified Agriculture Teachers and Professional Growth | | 30 | 40 – 31 | 30 – 21 | 20 – 11 | 10 – 1 | 0 |
| 7. Program Planning and Evaluation | | 22 | 32 - 25 | 24 - 17 | 16 – 9 | 8 -1 | 0 |

## SPECIFIC RECOMMENDATIONS FOR IMPROVEMENT

| Standard | Recommendations |
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## GENERAL SUGGESTIONS FOR IMPROVEMENT

| Standard | Recommendations |
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## Glossary and Definition of Terms

A

**Adequate Resources** – Minimum resources required for quality implementation of agricultural education programs as determined the state department of education.

**Advanced Audio/Visual and Communication Equipment** – Items used to enhance the presentation of instruction. Examples would be Smart boards, ELMO'S, LCD Projectors, and Projecting Microscopes etc.

**Advisory Council/Committee** – Volunteers who are officially appointed by the governing board of the local education agency or institution. Their purpose is to make recommendations to improve the quality and impact of instruction in agricultural education programs.

**Advisory Council/Committee Membership** – Representatives of the total school service area typically selected based upon geographical sections of the school district, predominant businesses and industry in the area, including both labor and management, parents of agriculture students, former students, various ages levels, different educational levels, both genders, special needs, racial and ethnic populations within the district.

**Agricultural Student Organization** – Agricultural career based organization that supports the development of students enrolled in systematic instruction leading to preparedness for an agricultural career – includes (but not necessarily limited to) the National FFA Organization, postsecondary Agricultural Students and National Young Farmers Education Association

**Authentic Assessments** – Assessments based on real-life experiences or skills using prior information and knowledge to solve realistic or authentic problems requiring students to use higher order thinking skills to consolidate and apply knowledge.

**Authentic Student Experience** – Application and sharing of real-life student experiences to facilitate learning.

## B

**Bloom's Taxonomy** – An educationally accepted standardization of levels of learning, types of learning occurs on a continuum and educational programs should offer and transmit to their students, higher and higher orders of learning as the student progresses. Levels include from lowest to highest, knowledge, comprehension, application, analysis, synthesis and evaluation.

## C

**Career Clusters** –Groups of similar occupations and industries developed by the U.S. Department of Education as a way to organize career planning.

**Career Pathways** – Broad groupings of careers that share similar characteristics and whose employment requirements call for many common interests, strengths and competencies.

**Certified Agriculture Teacher** – Teacher meeting all qualifications for the agricultural education licensure(s) in the state for which they are or intend to be teaching.

**Challenging Curriculum** – A results orientated curriculum that identifies specific learner outcomes that requires significant &/or special effort by the learner.

## E

**Experiential Learning** – Learning through experiences based outside the classroom in the world of work, the community and/or school based laboratories, etc.

## H

**Higher Order Thinking Skills** – The higher levels of thought and learning identified on Bloom's taxonomy above the knowledge level. (See Bloom's taxonomy.)

## I

**Industry Validated** – The industry has confirmed by examination and provision of objective evidence that the particular requirements for a specific intended use have been met.

**Instructional Facilities** – The school based facilities used and/or necessary for learning to occur.

**Instructional Material** – Items that are designed to serve as a major tool for assisting in the instruction of a subject or course. These items may be available in bound, unbound, kit or package form and may consist of hard-backed or soft-backed textbooks, consumables, learning laboratories, videos, DVD's, recordings, manipulative, electronic media (instructional computer programs, online services, laser discs, CD-ROM, etc.) and other commonly accepted instructional tools.

**Intra-curricular** – Inseparable, non-elective practice or method of an educational program taught within the current curriculum.

## N

**Non-biased** – Refusal to use life experiences, gender, race, religion, disability and/or circumstances in decision making or selection.

## P

**Pedagogical** –- The art, practice or science of teaching.

**Performance Data** – The sum or record of student assessment over time. (i.e. pre & post testing, or the measure of student progress over time.)

**Performance Measures** – Ways to objectively measure the degree of success a program has had in achieving its stated objectives, goals, and planned program activities.

## Q

**Quality Indicators** – Programmatic bases for measuring and/or determining the quality of a program

## S

**Sequences of Courses** – Identified pathways of courses which are ordered so as to provide transition preparing a student for success in the world of work or further education

**Stakeholders** – Anyone who benefits from the products of quality agricultural education programs (business, industry, taxpayers, parents, students, school personnel and administration that has a vested interest in the program.

**Supervised Agricultural Experience (SAE)** – All practical agricultural activities of educational value conducted by students outside of the regular class or laboratory instructional time for which systematic instruction and supervision are provided by the teacher, parent , employer and others. The activities may include entrepreneurial, exploratory, placement, research/experimental, analytical or directed laboratory experiences.

**Supervising Records** – Records kept of interactivity and assessment for teachers supervising the experiential learning activities of the students within their charge.

## T

**Teaching Calendar** – The identification of the instructional units and lessons to be taught along with a days devoted to instruction per unit and the order in which the units and lessons will be taught over the period of a school year.

## Y

**Year Round Instructional Activities** – Activities that occur or are scheduled throughout the calendar year, including summers, that involve education, recreational, SAE, and leadership & personal development instruction.